NOTE: It is the student’s responsibility to read the atlas carefully. Not knowing this information is \textbf{NOT} an excuse. Failure to meet the prerequisites will result in withdrawal from the class.

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<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Biological Sciences</td>
<td>5</td>
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<tr>
<td>2.</td>
<td>Business Management</td>
<td>12</td>
</tr>
<tr>
<td>3.</td>
<td>Chemistry</td>
<td>16</td>
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<tr>
<td>4.</td>
<td>Computer Science / IT</td>
<td>20</td>
</tr>
<tr>
<td>5.</td>
<td>Economics</td>
<td>25</td>
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<tr>
<td>6.</td>
<td>Education</td>
<td>29</td>
</tr>
<tr>
<td>7.</td>
<td>English</td>
<td>31</td>
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<tr>
<td>9.</td>
<td>Geography</td>
<td>36</td>
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<tr>
<td>10.</td>
<td>Health &amp; Physical Education</td>
<td>38</td>
</tr>
<tr>
<td>11.</td>
<td>History and Pakistan Studies</td>
<td>39</td>
</tr>
<tr>
<td>12.</td>
<td>Mass Communication</td>
<td>41</td>
</tr>
<tr>
<td>13.</td>
<td>Mathematics</td>
<td>45</td>
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<tr>
<td>14.</td>
<td>Philosophy</td>
<td>48</td>
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<tr>
<td>15.</td>
<td>Physics</td>
<td>49</td>
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<tr>
<td>16.</td>
<td>Political Science</td>
<td>53</td>
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<tr>
<td>17.</td>
<td>Psychology</td>
<td>56</td>
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<tr>
<td>18.</td>
<td>Religious Studies</td>
<td>59</td>
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<tr>
<td>19.</td>
<td>Sociology</td>
<td>61</td>
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<tr>
<td>20.</td>
<td>Statistics</td>
<td>63</td>
</tr>
<tr>
<td>21.</td>
<td>Urdu</td>
<td>66</td>
</tr>
</tbody>
</table>
The General Education Distribution Requirement for FRESHMEN

Students must complete the designated number of credit hours each of the four divisions of the curriculum listed below.

<table>
<thead>
<tr>
<th>Course</th>
<th>Number of courses</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Humanities</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td>1) Written and Oral Communications</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>2) Islamic Studies / Christian Studies</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>3) Humanities and Arts</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>b. Social or Behavioral Sciences</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>1) Pakistan Studies</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>2) Others Social Science or Behavioral Science Courses</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>c. Science and Mathematics</td>
<td>5</td>
<td>17 or 18</td>
</tr>
<tr>
<td>1) Must include at least two science course (Not from the same discipline)</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>2) Must include at least one Mathematics Course</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>3) Must include at least one Computer Course</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>4) One other course in either Science, Math, Statistics, Logic or Computer Science</td>
<td>1</td>
<td>3 or 4</td>
</tr>
<tr>
<td>d. University 100: Foundations of University Education</td>
<td>1</td>
<td>3 or 4</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>47 or 48</td>
</tr>
</tbody>
</table>

a) HUMANITIES (6 COURSES 18 CREDITS)

All students must complete the following FOUR courses in Written and Oral Communications.

<table>
<thead>
<tr>
<th>Written communication</th>
<th>Oral communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 101: Written and Grammar</td>
<td>MCOM 100: Fundamentals of Speech</td>
</tr>
<tr>
<td>ENGL 103: Advanced Writing Skills</td>
<td></td>
</tr>
<tr>
<td>URDU 101: Communicative Urdu</td>
<td></td>
</tr>
</tbody>
</table>
Students who believe that they have the knowledge and skills necessary to pass the competency examinations in written Urdu or written English or Spoken English may take the competency examinations at the beginning of the Freshman year. If they pass the competency examinations they will be exempted from the relevant specific required course and they may, instead, take advanced courses in those areas.

A student must take ONE course in Islamic Studies/Christian Studies plus ONE course selected from the following disciplines. English, Urdu, History, Religious studies, Philosophy, Foreign Languages, Arts, Music, Drama and Mass Communications.
SOCIAL AND BEHAVIORAL SCIENCE (3 COURSE-9 CREDITS)

A student must take ONE Pakistan Studies course and at least, TWO Courses from the following disciplines: Economics, Education, Geography, Pakistan Studies, Political Science, Anthropology, Psychology and Sociology.

SCIENCE AND MATHEMATICS (5 COURSES 17 OR 18 CREDITS)

Students must take
1) At least TWO Science courses (Not from the same discipline)
2) At least ONE computer Science Course
3) ONE other courses in either Science
4) ONE other course either in Science, Mathematics, Statistics, Logic or Computer Science.

UNIVERSITY 100: FOUNDATIONS OF UNIVERSITY EDUCATION
(1 COURSE-3 CREDITS)

- Prerequisite Lang 110(or exempted from the Language program)
- All entering students must take University 100 during their first semester or after they have finished the LANG program.
- Transfers with 60 or more credits are exempted.
The General Education Division for SOPHOMORES, JUNIORS and SENIORS

Humanities.
**Requirements:** (1 course)
Islamic studies/ethics (ISLM 101 or CRST 152)

**Disciplines:** (2 courses; at least one NOT in religious Studies)
- Art
- English
- History
- Music
- Religious Studies
- Social or Behavioral Sciences

**Requirements:** (1 course)
Pakistan Studies (PKST 101)

**Disciplines:** (2 courses; at least one NOT in Pakistan studies)
- Anthropology
- Education
- Pakistan Studies
- Political Sciences

Physical or Natural Sciences
**Disciplines:** (3 courses with labs; at least one from each group)
- Physical Sciences:
- Chemistry
- Physics
- Natural Sciences:
- Botany
- Zoology

Mathematics and Information Technology
**Requirements:** (1 course)
A Computer Science course OR demonstrate competence in Computer Science.
**If competence is demonstrated, the student must take a course in this division to replace it.**

**Disciplines:** (2 courses; at least one NOT in Computer Science)
- Computer Science/Information Technology
- Mathematics
- Statistics

Communications
**Requirement:** (4 courses)
- Fundamentals of speech (MCOM 100)
- English Writing/Grammar (ENGL 101) or demonstrated competence
- Advanced Writing Skills (ENGL 103)
- Communicative Urdu (URDU 101)
**If competence is demonstrated, the student must replace ENGL 101 with another course from the English Discipline**
# BIOLOGICAL SCIENCES

**BIOL 100: Introductory Biology**  
*(4 credits)*  
Only for students who have not studied Biology in higher secondary school or A level or equivalent

The course includes basic concepts of Biology with cell as a building block, its function, reproduction, genetics and inheritance, basic concepts in evolution, ecology and principles of living systems. The course is designed to provide to the non science students an overview of modern Biology and to elucidate its importance in everyday life.

<table>
<thead>
<tr>
<th>Section</th>
<th>Days</th>
<th>Time</th>
<th>Room</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Tuesday, Thursday</td>
<td>08:00-09:15</td>
<td>S-425</td>
<td>Dr. S. Mehanz</td>
</tr>
<tr>
<td>LAB</td>
<td>Monday</td>
<td>10:00-11:50</td>
<td>S-341</td>
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<tr>
<td>B</td>
<td>Monday, Wednesday, Friday</td>
<td>02:00-02:50</td>
<td>S-417</td>
<td>U. Moeen</td>
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<td>LAB</td>
<td>Monday</td>
<td>10:00-11:50</td>
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<td>C</td>
<td>Tuesday, Thursday</td>
<td>09:30-10:45</td>
<td>S-416</td>
<td>Dr. R. Siddiqi</td>
</tr>
<tr>
<td>LAB</td>
<td>Thursday</td>
<td>02:00-03:50</td>
<td>S-331</td>
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<tr>
<td>D</td>
<td>Monday, Wednesday, Friday</td>
<td>12:00-12:50</td>
<td>S-416</td>
<td>Dr. H. Butt</td>
</tr>
<tr>
<td>LAB</td>
<td>Friday</td>
<td>02:00-03:50</td>
<td>S-331</td>
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<tr>
<td>E</td>
<td>Monday, Wednesday, Friday</td>
<td>03:00-03:50</td>
<td>S-425</td>
<td>Dr. A. S. Khan</td>
</tr>
<tr>
<td>LAB</td>
<td>Tuesday</td>
<td>11:00-12:50</td>
<td>S-431</td>
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<td>F</td>
<td>Tuesday, Thursday</td>
<td>02:00-03:15</td>
<td>S-410</td>
<td>Dr. A. S. Khan</td>
</tr>
<tr>
<td>LAB</td>
<td>Friday</td>
<td>08:00-09:50</td>
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<tr>
<td>G</td>
<td>Tuesday, Thursday</td>
<td>11:00-12:15</td>
<td>S-416</td>
<td>Dr. W. George</td>
</tr>
<tr>
<td>LAB</td>
<td>Tuesday</td>
<td>02:00-03:50</td>
<td>S-331</td>
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<tr>
<td>H</td>
<td>Monday, Wednesday, Friday</td>
<td>10:00-10:50</td>
<td>S-416</td>
<td>T. Saleem Khan</td>
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<tr>
<td>LAB</td>
<td>Friday</td>
<td>02:00-03:50</td>
<td>S-341</td>
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<td>J</td>
<td>Monday, Wednesday, Friday</td>
<td>08:00-08:50</td>
<td>S-424</td>
<td>T. Saleem Khan</td>
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<tr>
<td>LAB</td>
<td>Monday</td>
<td>02:00-03:50</td>
<td>S-341</td>
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</tbody>
</table>

**BIOL 102: Introductory Plant Biology**  
*(4 credits)*  
Only for students who have studied biology in higher secondary school/A level or equivalent

This course covers structure-function relationship of plants, basic principles of genetics and molecular genetics, biotechnology and its use in modifying plants. Ecosystem, environmental issues and the relevance of flowering plants in human life are also examined.

<table>
<thead>
<tr>
<th>Section</th>
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<th>Time</th>
<th>Room</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Tuesday, Thursday</td>
<td>11:00-12:15</td>
<td>S-425</td>
<td>Dr. W. Hussain</td>
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<tr>
<td>LAB</td>
<td>Monday</td>
<td>02:00-03:50</td>
<td>S-331</td>
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<td>B</td>
<td>Monday, Wednesday, Friday</td>
<td>11:00-11:50</td>
<td>S-416</td>
<td>Dr. R. Siddiqi</td>
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<tr>
<td>LAB</td>
<td>Monday</td>
<td>08:00-09:50</td>
<td>S-331</td>
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</tbody>
</table>

**BIOL 105: General Zoology**  
*(4 credits)*  
Only for students who have studied Biology in higher secondary school/A- Level or equivalent

The structure, functions, ecology and evolution of all major animal groups including invertebrates and chordates. The origin of multicellular forms and basic environmental factors affecting them.

<table>
<thead>
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<th>Section</th>
<th>Days</th>
<th>Time</th>
<th>Room</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Monday, Wednesday, Friday</td>
<td>10:00-10:50</td>
<td>S-425</td>
<td>Dr. K. Z. Rasib</td>
</tr>
<tr>
<td>LAB</td>
<td>Monday</td>
<td>02:00-03:50</td>
<td>S-321</td>
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<tr>
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<td>Tuesday, Thursday</td>
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<td>S-425</td>
<td>Dr. K. Z. Rasib</td>
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<tr>
<td>LAB</td>
<td>Thursday</td>
<td>02:00-03:50</td>
<td>S-431</td>
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</tbody>
</table>
BIOL 201: Cell Biology  (3 credits)
This course will examine: the ultra structure of cell; the cell membrane, cytoskeleton, nucleus, mitochondria, chloroplast, ribosome, dictyosome, vacuole, microbodies & cell surface. Protein synthesis and secretion, chromosomal aberrations, mitosis, meiosis & cell cycle regulation will also be discussed.

Section A  Monday, Wednesday 02:00-02:50  S-410  Dr. S. Butt  
LAB     Friday 02:00-03:50  S-321  
Section B  Monday, Wednesday 11:00-11:50  S-425  Dr. S. Maqbool  
LAB     Friday 08:00-09:50  S-331  

BIOL 202: Diversity in Plants  (4 credits)
This course deals with the classifications of organisms; survey of algae, fungi and various groups of plants with emphasis on evolutionary trends.

Section A  Monday, Wednesday, Friday 09:00-09:50  S-410  Dr. H. Saeed  
LAB     Tuesday 11:00-12:50  S-341  

BIOL 203: General Genetics  (3 credits)
Introduction; concept of gene; Mendelian inheritance; sex-linked inheritance; linkage and crossing over; cytoplasmic inheritance; structure, chemistry, functions and types of DNA and RNA; recombination in viruses, bacteria, fungi and eukaryotes; Operon model; transposable elements; genetic code; variation in chromosomal number and structure; population genetics; problems related to the theoretical course.

Section A  Monday, Wednesday 03:00-03:50  S-410  U. Mobeen  
LAB     Thursday 02:00-03:50  S-321  
Section B  Tuesday, Thursday 09:30-10:20  S-417  U. Mobeen  
LAB     Wednesday 10:00-11:50  S-431  

BIOL 205: Biostatistics  (3 credits)
Introduction to statistics including mean, mode, median, standard error and standard deviation, probability and test of significance, correlation, analysis of variance, regression and experimental design.

Section A  Tuesday, Thursday 08:00-08:50  S-416  Dr. S. Butt  
LAB     Tuesday,11:00-12:50  S-321  

BIOL 302: Animal Form and Function  (4 credits)
Comparison of animals with one another. Similarities and differences among the major phyla of animal kingdom. External and internal variations in organs and systems; adaptations that enable them to live successfully in their respective environments.

Section A  Monday, Wednesday, Friday 08:00-08:50  S-410  Dr. W. George  
LAB     Friday 10:00-11:50  S-341
**BIOL 313: Biochemistry**  
(4 credits)  
Prerequisite for non-science students: CHEM 110  
The course designed to provide solid understanding of organic structure of living systems. The topics include chemistry, structure, specific roles of carbohydrates, lipids, amino acids, protein and nucleic acids. General characteristics and properties of enzymes including enzyme kinetics will also be covered.

Section A  
Monday, Wednesday, Friday 11:00-11:50  
S-424  
Dr. H. Butt

LAB  
Tuesday 08:00-09:50  
S-329

**BIOL 315: Fundamentals of Microbiology**  
(3 credits)  
This course deals with the study of microbial life and its function using pure culture techniques, microscopy, bacterial morphology, anti-microbial resistance and their applications in industry, biotechnology, environmental science and basic research.

Section A  
Monday, Wednesday 10:00-10:50  
S-410  
Dr. S. Butt

LAB  
Thursday 11:00-12:50  
S-321

Section B  
Monday, Wednesday 11:00-11:50  
S-410  
Dr. S. Butt

LAB  
Friday 10:00-11:50  
S-321

**BIOL 404: Conservation Biology**  
(4 credits)  
Prerequisite: BIOL 302  
The philosophy and significance of wildlife conservation: effects of industrialization, agriculture and urbanization on wildlife; wildlife rules and regulations; wildlife sanctuaries, game reserves and national parks, endangered species; international conservations.

Section A  
Tuesday, Thursday 11:00-12:15  
S-410  
U. Mobeen

LAB  
Tuesday 02:00-03:50  
S-321

**BIOT 201: Introduction to biotechnology**  
(3 credits)  
Brief history of biotechnology, different aspects of biotechnology and its future development as a cornerstone in human welfare.

Section A  
Monday, Wednesday 09:00-09:50  
S-424  
Dr. M. Irfan

LAB  
Tuesday 02:00-03:50  
S-329

Section B  
Tuesday, Thursday 08:00-08:50  
S-410  
T. Saleem Khan

LAB  
Tuesday 11:00-12:50  
S-329

**BIOT 202: Protoplast, Cell & Tissue Culture**  
(4 credits)  

Section A  
Monday, Wednesday, Friday 08:00-08:50  
S-416  
Dr. S. Mehanz

LAB  
Monday 02:00-03:50  
S-329

Section B  
Tuesday, Thursday 11:00-12:15  
S-424  
Dr. H. Butt

LAB  
Thursday 02:00-03:50  
S-329
BIOT 301: Analytical Techniques in Biology (3 credits)
The course includes fundamental techniques in Biological Sciences involving vast array of methodologies that a biologist requires to step in any area of research. It includes various types of Chromatographies, Gel Electrophoresis, Staining procedures, Spectrophotometry, Microtomy and Microscopy.

Section A  Tuesday, Thursday 08:00-08:50  S-417  Dr. M. Irfan
LAB    Thursday 11:00-12:50  S-329

Section B  Monday, Wednesday 12:00-12:50  S-424  Dr. S. Mehanz
LAB    Friday 02:00-03:50  S-329

BIOT 302: Fundamentals of Enzymology (4 credits)
The course covers a brief history of enzymes, the nature of the enzyme structure, an introduction to the amino acids that make up protein structure and determine function relationships, specificity of enzyme action, physical organization of enzymes (multienzyme complex), chemical and enzymatic kinetics, Enzyme-substrate interaction and the roles that enzymes play as fountain of life.

Section A  Monday, Wednesday, Friday 09:00-09:50  S-416  Dr. W. Hussain
LAB    Monday 10:00-11:50  S-331

Section B  Tuesday, Thursday 09:30-10:45  S-425  Dr. W. Hussain
LAB    Wednesday 10:00-11:50  S-331

BIOT 305: Commercialization of Biotechnology Products (3 credits)
An overview of commercial products and services that Biotechnology offers. General aspects related to the quality control and criterion for industrially important bioprocesses; their management and impact on the present day market. Resource planning and management of bio-inoculant; antimicrobial agents; metabolites, enzymes and therapeutic proteins. Biotechnology and intellectual property right. Industry interaction and technology transfer. Basic of effective marketing and promotion of Biotechnology product. Steps involved in commercialization of biotechnological merchandise.

Section A  Monday, Wednesday 12:00-12:50  S-008  Dr. K. A. Malik
Lab:  Wednesday 02:00-03:50  S-331

BIOT 307: Molecular Immunology (3 credits)
Introduction to immunology; the basic processes involved in triggering the immune system and rendering it resistant or susceptible to different infections. The study of molecular and biochemical events that influence immune responses. This course also include: innate (Non-specific) and adaptive (Specific) immunity, immunoglobulin; structure and functions, antigens, antibody formation and hypersensitivity.

Section A  Monday, Wednesday 02:00-02:50  S-424  Dr. N. Anwar
Lab:  Monday 10:00-11:50  S-321
BIOT 309: Microbial Biochemistry  (3 credits)

Section A  Monday, Wednesday 09:00-09:50  S-417  Dr. L. Johnson
LAB  Thursday 11:00-12:50  S-331

BIOT 313: Molecular Biology  (4 credits)
Prerequisite: BIOL 201
History, structure and function of DNA, DNA replication in prokaryotes and eukaryotes, Structure, function and types of RNA, transcription, post transcriptional processing, translation, post translational processing in prokaryotes and eukaryotes, Control of gene regulation in prokaryotes and eukaryotes, Mutation and mutagens, DNA damage and repair, recombination and transposable elements.

Section A  Tuesday, Thursday 02:00-03:15  S-416  Dr. A. Maqbool
LAB  Tuesday 11:00-12:50  S-331
Section B  Tuesday, Thursday 09:30-10:45  S-410  Dr. N. Anwar
LAB  Thursday 11:00-12:50  S-341

BIOT 314: Bionergetics and Metabolism  (3 credits)
Prerequisites: BIOL 313
This course covers intermediate metabolism in biological systems. Pathways of breakdown and synthesis of biological molecules such as carbohydrates, lipids and nitrogenous compounds will be examined. Emphasis will be placed on the thermodynamics of the reactions and the regulatory mechanism of pathways.

Section A  Monday, Wednesday 10:00-10:50  S-424  Dr. A. S. Khan
LAB  Friday 10:00-11:50  S-431

BIOT 316: Fundamentals of Virology  (4 credits)
Origin and nature of viruses, taxonomy and classification, ultra structure of viruses, virus isolation, purification and identification, models of viral replication, viral genome analysis, chemotherapy of viral infections, virus host interaction, immunity to viral infections, important viral families of human importance; family characteristics, transmission, epidemiology and pathogenicity.

Section A  Monday, Wednesday, Friday 03:00-03:50  S-424  Dr. N. Anwar
LAB  Friday 10:00-11:50  S-331

BIOT 407: Aquaculture Technology  (4 credits)
Introduction, sources and quality of water, culture systems (open, semi-closed and closed system). Water flow and pumps, filtration and water treatment, culture methods for seaweed, molluscs, crustacean fishes and higher vertebrates, natural food and artificial feed, harvesting techniques. Policies on leasing.

Section A  Monday, Wednesday, Friday 02:00-02:50  S-416  Dr. W. George
LAB  Thursday 02:00-03:50  S-341
BIOT 412: Medical Biotechnology (4 credits)
Prerequisite: BIOT 313
Introduction to health biotechnology, cancer immunotherapy, gene therapy, stem cell biotechnology, knockout mice and gene inserts. siRNA, genetically engineered animals, infectious diseases, diagnostics and antibiotic resistance, biomaterials in regenerative medicine, vaccine technology, novel antimicrobial agents, their design and other future medical biotechnologies.

Section A  Monday, Wednesday, Friday 08:00-08:50  S-417  Dr. L. Johnson
LAB  Thursday 08:00-09:50  S-331

BTNY 207: Economic Botany (3 credits)
This course will cover the study of plants from their economic point of view. The improvement of plants for better yield of their economic products and the strategies for the domestication and preservation of economic plants. Plants as a source of food; beverage, herbs and spices; medicinal plants, psychoactive plants, poisonous and allergy plants, fibers, dyes, tannins, hydrogel, latexes and resins, wood cork and bamboo. Cultural and molecular approaches to improvement of economic products and domestication and preservation of economic plants.

Section A  Monday, Wednesday 11:00-11:50  S-417  Dr. A. S. Khan
LAB  Tuesday 08:00-09:50  S-321

ENVR 301: Introduction to Environmental Sciences (4 credits)
Prerequisite: Instructor's approval required
A survey of biological and physical environmental problems. Focusing on geological hazards. Water quality. Water supply, solid waste, introduced and endangered species, preservation of wetland ecosystem, social and political approaches to environmental management.

Section A  Monday, Wednesday, Friday 12:00-12:50  S-410  T. Saleem Khan
LAB  Thursday 11:00-12:50  S-431

ENVR 402: Solid Waste Management (3 credits)
Sources, classification, generations, onsite handling and storage, collection, transfer recycling and disposal techniques of municipal solid waste (MSW), land filling, thermal conservation, composting, concept of integrated solid waste management. Existing practices and their hazards. Economic evaluation of the systems, hospital waste management.

Section A  Monday, Wednesday 02:00-02:50  S-425  Dr. H. Saeed
LAB  Friday 10:00-11:50  S-329
ZOOL 305: Integrated Pest Management

Prerequisite: BIOL 302

People, plants and pests, dynamics of pest populations, intensive agriculture, pest problems, concepts of IPM, cultural control, host plant resistance, parasitoids and predators, microbial control, botanical pest control, synthetic organic insecticides biotechnology approaches, bio-rational and other innovative approaches, IPM achievements, potential and challenges.

Section A  Monday, Wednesday, Friday 12:00-12:50  S-425  Dr. K Z. Rasib
LAB       Tuesday 02:00-03:50             S-341
BUSINESS

BUSN 101: Principles of Financial Accounting  (3 credits)
Understanding of accounting records, entering transactions, applying accounting concepts, principles and practices; reading financial statements

Section A & B Tuesday, Thursday 11:00-12:15  E-025  A. Naweed

BUSN 170: Principles of Management  (3 credits)
Basic management concepts, tools, and techniques for improving organizational efficiency and effectiveness are introduced. Management process consisting of planning, organizing, staffing, directing, coordination, reporting and budgeting (PODSCORB) are covered.

Section A & B Monday, Wednesday 03:30-04:45  E-025  Z. Bhutta

BUSN 201: Intermediate Accounting  (3 credits)
Prerequisite: BUSN 101
Develop a deeper understanding of the concepts, standards and principles underlying various accounting practices and techniques in order to develop higher level accounting competencies. It also looks at reporting requirements, group accounts, and corporate financing.

Section A  Tuesday, Thursday 08:00-09:15  E-103  B.H. Awan, ACA
Section B  Tuesday, Thursday 09:30-10:45  E-103  B.H. Awan, ACA

BUSN 206: Management Accounting and Control  (3 credits)
Prerequisite: BUSN 101
Prepares students to use accounting information, especially costs, to make management decisions; cost accounting information; role of budgeting to facilitate rational decision-making. The course also introduces structures and systems for control.

Section A  Tuesday, Thursday 11:00-12:15  E-103  Q. Imam, ACA
Section B  Tuesday, Thursday 12:30-01:45  E-103  Q. Imam, ACA

BUSN 280: Marketing & Selling Skills  (3 credits)
Prerequisite: BUSN 170
Basic tools and skills to develop an effective marketing orientation for developing and marketing products and services. Identifying problems and solutions and application of concepts is integral to the course. There is also a strong emphasis on the development of selling skills.

Section A  Tuesday, Thursday 02:00-03:15  E-103  I. Nasir
Section B  Tuesday, Thursday 03:30-04:45  E-103  I. Nasir
BUSN 301: Financial Reporting  
(Accounting & Finance specialization only)  
(3 credits)  
Prerequisite: BUSN 201  
Prepares students to generate accounting information needed by different stakeholders, and includes leasing, stakeholder’s equity, earnings per share, and financial instruments such as government issues.

Section A  Monday, Wednesday 11:00-12:15  E-104  B.H. Awan, ACA

BUSN 321: Financial Management I  
(3 credits)  
Prerequisite: BUSN 201  
Introductory course focuses on tools, techniques and concepts of Finance, such as financial analysis, financing options, capital budgeting, risk analysis, and the role financial markets and intermediaries.

Section A  Tuesday, Thursday 08:00-09:15  E-104  Dr. B. A. Khan
Section B  Tuesday, Thursday 09:30-10:45  E-104  A. Naweed

BUSN 360: Operations & Project Management I  
(3 credits)  
Prerequisite: BUSN 170  
This course focuses on evaluation and implementation of projects within organizations, as well as managing operational structures and systems to achieve organizational goals and objectives.

Section A  Monday, Wednesday 08:00-09:15  E-104  M. Saleem
Section B  Monday, Wednesday 09:30-10:45  E-104  M. Saleem

BUSN 364: Production, Scheduling & Loading Operations  
(Operation Management specialization only)  
(3 credits)  
This course introduces critical operational processes from manufacturing. Scheduling and factory loading play a key role in meeting production targets, requiring constant supervision and monitoring.

Section A  Monday, Wednesday 02:00-03:15  E-103  M. Saleem

BUSN 380: Advanced Marketing & Sales  
(Marketing & Sales specialization only)  
(3 credits)  
Prerequisite: BUSN 280  
This course builds upon the tools, concepts and techniques of the introductory marketing course, and also introduces more advanced topics in international marketing, and marketing strategy.

Section A  Tuesday, Thursday 11:00-12:15  E-105  S. Ahmed
BUSN 404: Taxation  
(Accounting & Financial specialization only)  
Prerequisite: BUSN 301  
Focuses on analyzing the law pertaining to taxation and tax structure. The emphasis is on corporate taxation and related issues.

Section A  Tuesday, Thursday 02:00-03:15  E-104  F. Ali

BUSN 410: Accounting Information Systems  
(Accounting & Finance specialization only)  
Prerequisite: BUSN 301  
This course looks at the complementarity and application of information technology to accounting, including the development of system and software for the profession.

Section A  Tuesday, Thursday 03:30-04:45  E-104  M.B Ahmed, FCA

BUSN 460: Business Law  
(For Senior Year Business Students Only)  
Introductory course on laws pertaining to the functioning of business with strong emphasis on theory and practice in Pakistan. Includes, some elements of tax law and labor law.

Section A  Tuesday, Thursday 08:00-09:15  E-105  S. Sikander
Section B  Tuesday, Thursday 09:30-10:45  E-105  S. Sikander

BUSN 461: New Product Development  
(Operation Management specialization only)  
Prerequisite: BUSN 361  
This course covers the range of issues associated new productions: from conception to marketing, with a strong focus on satisfying customer needs. The importance of technological and management challenges is also addressed.

Section A  Monday, Wednesday 09:30-10:45  E-103  Dr. F. A. Malik

BUSN 464: Total Quality Management  
(Operation Management specialization only)  
Prerequisite: BUSN 360  
This is a critical course for operations specialists. It examines the philosophy of TQM focusing on continuous improvements for customer satisfaction. Key principles and concepts will be discussed with many real world examples.

Section A  Monday, Wednesday 11:00-12:15  E-103  Dr. F. A. Malik

BUSN 480: Marketing Research  
(Marketing & Sales specialization only)  
Prerequisite: BUSN 380  
This course introduces students to qualitative and quantitative research methods used in marketing. There is a strong emphasis on the application of technical and conceptual tools to real world situations through projects and studies.

Section A  Wednesday 14:00-15:15, 15:30-16:45  E-104  I. Nasir
BUSN 484: Brand Management (3 credits)
(Marketing & Sales specialization only)
Prerequisite: BUSN 380
This is a specialized course looking at creating and sustaining brands. The course uses all the tools and concepts of marketing and applies them to analyzing the evolution of brands. There is a very strong hand on focus to this course.

Section A  Tuesday, Thursday 02:00-03:15  E-105  S. Ahmed
# CHEMISTRY

**CHEM 100: Introduction to Chemistry**  
(3+1 credits)  
Only open to students who have not taken Chemistry at the F.Sc. and A-Level  
Introduction to various branches of Chemistry, inorganic, organic and physical chemistry, fundamental concepts and their application in daily life including elements, compounds and mixture. Chemical reactions, stoichiometry and acid-base concepts.

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<td>Dr. S. Jelani</td>
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<td>B</td>
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<td>Dr. A. Abid</td>
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**CHEM 110: Introduction to Inorganic Chemistry**  
(3+1 credits)  
Prerequisite: F.Sc. or A-Level Chemistry  
Introduction to the foundations of Chemistry including electronic structure of atoms, ions and molecules, quantum numbers, periodic classification, chemical bonding and theories i.e. VBT, MOT for simple homonuclear and diatomic heteronuclear molecules, VSEPR theory and shape of molecules, chemical equilibria; acid-base chemistry, redox reactions and electrochemical series.

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**CHEM 114: Introduction to Organic and Biochemistry**  
(3+1 credits)  
Prerequisite: F.Sc. or A-Level Chemistry  
Chemistry of carbon; introduction to functional groups inter-convension; study of hydrocarbons; study of hydrocarbons including additions to multiple bonds and substitution reactions of benzene; Chemistry of food and its components including carbohydrates, proteins, lipids, vitamins and minerals.

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CHEM 117: Chemistry I  (3+1 credits)

Prerequisite: F.Sc. or A-Level Chemistry

Basic concepts of thermodynamics, thermochemistry, quantum mechanics, and atomic structure. Empirical properties of gases, deviation from ideal behavior, intramolecular forces, physical properties off liquids and solids, packing types and geometry of solids, crystal structure, Braggs law and it's applications, Basic concepts of chemical kinetics, differential and integrated rat laws, order of reactions and molecularity, Arrhenius equation, experimental determination of order of reaction and rate constants, factors affecting rates of reaction, chemical equilibrium and equilibrium constant, surface phenomenon: surface energy, surface tension and its measurement.

Section A  Tuesday, Thursday 08:00-09:15  S-215  Dr. A. Y. Khan
Lab  Wednesday 08:00-09:45  S-148

CHEM 221: Quantitative Analysis  (3+1 credits)

Prerequisite: CHEM 110 OR CHEM 114 OR CHEM 117

Sample handling error analysis and statistical treatment of data. Solutions and standardization, measurement and calculations relevant to volumetric and gravimetric analysis, homogenous equilibria (acid base, oxidation-reduction and complexometry) heterogenous equilibria (gravimetric analysis, precipitation titration). Various chromatographic techniques.

Section A  Monday, Wednesday, Friday 03:00-03:50  S-216  Dr. M. S. Iqbal
Lab  Monday 12:00-01:45  S-138

CHEM 240: Principles of Organic Chemistry  (3+1 credits)

Prerequisite: F.Sc. or A-Level Chemistry

Basic Concepts of organic chemistry like resonance, inductive effect, hyperconjugation and their importance. Isomerism and stereochemistry including conformational analysis; geometric isomerism; stereo specificity, Chemistry of hydroxyl group containing compounds including alcohols, phenols, and ethers and thiols

Section A  Monday, Wednesday, Friday 11:00-11:50  S-215  Dr. S. Jalani
Lab  Tuesday 11:00-12:30  S-135

CHEM 241: Organic Chemistry I  (3+1 credits)

Prerequisite: F.Sc. or A-Level Chemistry

Acids and bases in Organic Chemistry, Chemistry of Carboxylic acids and their derivatives Chemistry of alkyl halides including nacleophilic substitution and elimination reactions Mechanism; Chemistry of amines and their derivatives.

Section A  Tuesday, Thursday 09:30-10:45  S-215  Dr. D. Ahmed
Lab  Friday 11:00-12:45  S-135
CHEM 308: Industrial Chemistry  
Prerequisite: CHEM 100 or 110 or 114  
Characteristics and importance of chemical industries, conversion efficiency and yield, rationalization, economic and technical feasibilities, acids, bases, glass, cement, ceramics, leathers and metallurgies of important metals.

Section A  Tuesday, Thursday 12:30-01:45  S-215  Dr. A. Abid
Lab  Monday 02:00-03:45  S-138

CHEM 310: Biochemistry  
Open to Junior Year Students  
Detailed structure and physiological function of primary metabolites including carbohydrates, proteins, lipids, nucleic acids and nature and role of enzymes and coenzymes, mechanism of enzyme action, kinetics and regulation of enzymes.

Section A  Monday, Wednesday, Friday 09:00-09:50  S-215  Dr. M. I. Aujla
Lab  Tuesday 09:30-11:00  S-135

CHEM 331: Chemistry of Main Group Elements  
Prerequisite: CHEM 110 or 114  
Chemistry of S and P block elements with emphasis on lithium and beryllium, boron and aluminum carbon and silicon, nitrogen and phosphorus and oxygen and sulphur families including halogens and zero group elements.

Section A  Monday, Wednesday, Friday 03:00-03:50  S-215  S. Azeem
Lab  Thursday 02:00-03:45  S-138

CHEM 351: Physical Chemistry I- Thermodynamics and Electrochemistry  
Prerequisite: CHEM 218  
The kinetic theory of gases, distribution of molecular velocities, mean free path, critical phenomena, equations of state, advanced concepts in thermodynamics, advanced concepts in electrochemistry, phase rule and phase diagrams.

Section A  Monday, Wednesday, Friday 10:00-10:50  S-215  Dr. A. Y. Khan
Lab  Tuesday 11:00-12:30  S-148

CHEM 362: Analytical Chemistry  
Prerequisite: CHEM 110 or 114  
Introduction to analytical techniques and spectrochemical methods of analysis, ultraviolet, infrared, mass spectroscopy, nuclear magnetic resonance spectroscopy, and scope of analytical methods in everyday chemistry (clinical, agriculture, pharmaceuticals etc.).

Section A  Monday, Wednesday, Friday 08:00-08:50  S-215  Dr. M. Al Rashida
Lab  Thursday 08:00-09:30  S-138
CHEM 401: Environmental Chemistry  
(3+1 credits)
Prerequisite: CHEM 333
Introduction to environment, air pollution, water pollution, noise pollution, solid waste pollution and management, Ecotoxicology. Hazardous waste and its management.

Section A  
Monday, Wednesday, Friday 09:00-09:50  
S-216  
Dr. A. Abid

Lab  
Tuesday 08:00-09:30  
S-138

CHEM 408: Pharmaceutical Chemistry  
(3+1 credits)
Prerequisite: CHEM 310
Introduction, classification of drugs, pharmacologically active products, disease-causing viruses and bacteria, anti-cancer and antiviral compounds and their mode of action, rational drug design, basic concepts and illustrations, study of some important drugs and their mode of action.

Section A  
Monday, Wednesday, Friday 08:00-08:50  
S-216  
Dr. G. Johnson

Lab  
Thursday 08:00-09:30  
S-135

CHEM 431: Inorganic Chemistry II  
(3+1 credits)
Prerequisite: CHEM 331
Chemistry of transition elements, general characteristics, nomenclature, various theories and their applications, chemistry of carbonyl and nitrosyl compounds.

Section A  
Monday, Wednesday, Friday 12:00-12:50  
S-215  
S. Azeem

Lab  
Tuesday 02:00-03:45  
S-138

CHEM 432: Coordination Chemistry  
(3+1 credits)
Prerequisite: CHEM 110
Introduction to coordination chemistry, nomenclature, theories of coordinate bond, absorption spectra and magnetic properties; stereo chemistry, isomerism, stability, kinetics and reactions of complexes; applications of coordination compounds in various fields.

Section A  
Tuesday, Thursday 09:30-10:45  
S-216  
Dr. C. Munir

Lab  
Monday 10:00-11:45  
S-138

CHEM 443: Advanced Organic Chemistry  
(3+1 credits)
Prerequisite: CHEM 241
Advanced reaction mechanism including reactive intermediates, pericyclic reactions, rearrangement reactions and oxidation-reduction reactions.

Section A  
Tuesday, Thursday 02:00-03:15  
S-215  
Dr. D. Ahmed

Lab  
Wednesday 12:00-01:45  
S-135
COMPUTER SCIENCE / IT

COMP 102: Programming I  (3 credits, (2+2)
Introduces students to the basic skills of problem solving and programming. It emphasizes problem analysis, algorithm design, program development and testing. It provides a solid foundation in structured design techniques and introduces the object oriented thought process and basic tools.

Section A  Monday, Wednesday 09:00-10:50  S-218  Dr. N. Ashraf
Section B  Monday, Wednesday 02:00-03:50  S-218  Dr. Sarmad
Section C  Tuesday, Thursday 02:00-03:50  S-219  Dr. Sarmad

COMP 111: Programming II  (3 credits) (2+2)
Prerequisite: COMP 102
Continues the topics begun in COMP 102, shifting the emphasis to object oriented principles and techniques. Classes, inheritance and class hierarchy and polymorphism are fully explored and basic data structures are introduced. Other topics include simple analysis of algorithms, basic searching and sorting techniques.

Section A  Monday, Wednesday 11:00-12:50  S-219  S. Anwar
Section B  Monday, Wednesday 02:00-03:50  S-219  Z. Shah

COMP 113: Discrete Mathematics  (3 credits)
Prerequisite: MATH 101 or A-Level or Intermediate Mathematics
Introduces the foundations of discrete mathematics as they apply to Computer Science, focusing on providing a solid theoretical foundation for further work. Further, this course aims to develop understanding and appreciation of the finite nature inherent in most Computer Science problems and structures through study of combinatorial reasoning, abstract algebra, iterative procedures, predicate calculus, tree and graph structures.

Section A  Tuesday, Thursday 09:30-10:45  S-317  B. A. Bajwa
Section B  Tuesday, Thursday 11:00-12:15  S-317  B. A. Bajwa

COMP 200: Data Structures and Algorithms  (3 credits (2+2)
Prerequisite: COMP 111, COMP 113
Data structures, along with the algorithms required to manipulate them are introduced. Selection or construction of suitable data structures for a wide range of problems is emphasized, along with the analysis of the efficiency of chosen solutions. Standard problems such as sorting and searching are explored in detail. Students are exposed to the concepts of time and space complexity of computer programs.

Section A  Monday, Wednesday 09:00-10:50  S-219  Dr I H. Shah
Section B  Monday, Wednesday 11:00-12:50  S-218  Dr I H. Shah
COMP 205: Introduction to Information Technology (3 credits)
Prerequisite: COMP 102, STAT 102

Section A  Monday, Wednesday, Friday 08:00-08:50  S-316  Dr. A. Aziz

COMP 206: Hardware Logic and Design (3 credits (2+2))
Prerequisite: Math 101 or A-Level or Intermediate Mathematic
This course is designed to introduced students to the fundamentals of Hardware system design, beginning at the digital logic level with bits, binary representations and basic binary operations. These are represented for hardware purposes using logic gates, and built up into combinational and then sequential logic circuits. Basic functional units are assembled from these circuits, and then combined to provide higher level computing functions. The basics of assembly language are introduced basic elements of some real life architectures are examined.

Section A  Monday, Wednesday, Friday 11:00-11:50  S-316  Z. Shah

COMP 213: Database Systems (3 credits (2+2))
Prerequisite: COMP 200
This course introduces basic concepts of databases, various data models, data storage and retrieval techniques, and database design techniques. The major emphasis will be on the relational data model, the relational algebra as a basis for queries in SQL, and normalization techniques to optimize database structure.

Section A  Monday, Wednesday 02:00-03:50  S-319  A. H. Zahid

COMP 220: Software Engineering I (3 credits)
Prerequisite: COMP 111
This course introduces the basics of Software Engineering, the terminologies involved and various principles, methods, tools and techniques used to produce quality software. Two fundamental approaches of software engineering, structural and object oriented, are introduced. Various techniques used for requirements engineering, system/software design, implementation, and testing are introduced. Fundamental issues of software measurement and project management are discussed.

Section A  Tuesday, Thursday 11:00-12:15  S-210  S. Zehra
COMP 301: Operating Systems  
Prerequisite: COMP 200, COMP 206  
(3 credits)  
The objective of the course is to give students knowledge of the construction and working of operating systems, and to enable students to understand management and sharing of the computer resources communication and concurrency. Develop effective and efficient applications and also appreciate the problems and issues regarding multi-user, multi-tasking, and distributed system.

Section A  
Tuesday, Thursday 09:30-10:45  
S-218  
Dr. I H. Shah

COMP 311: Computer Networks  
Prerequisite: COMP 205, COMP 301  
(3 credits)  
The course will briefly introduce the engineering concepts underlying computer communication, including analogue and digital transmission, circuit switching and packet switching. Logical network structure and operation including network layers, network models, (OSI, TCP/IP) and protocol standards will be a central theme. Emphasis is given to the understanding of modern network concepts.

Section A  
Tuesday, Thursday 09:30-10:45  
S-316  
A. H. Zahid

COMP 400A: Senior Project  
Prerequisite: COMP 213, COMP 220, Senior standing  
(3 credits)  
The senior project requires students over the course of two semesters to research, conceive, plan and develop a real and substantial project related to computer science / Software Engineering / Information Technology. It provides an opportunity to the student to realize his or her acquired professional competence in the form of a demonstrable software product or other tangible result. The student must also make an oral and written project presentation.

Section A  
Monday, Wednesday 01:00-01:50  
S-210  
B. A. Bajwa

COMP 401: Ethics for Computing Professionals  
Prerequisite: COMP 205, COMP 220  
(1 credits)  
This course is designed to introduce students to the ethical questions faced by designer, developers, managers and users of information systems, including intellectual property rights, privacy concerns, professional responsibilities, and deliberate destructive use of IT resources. It will develop broad guidelines and highlight their application in specific instances.

Section A  
Friday 12:00-12:50  
S-317  
Dr. Sarmad

COMP 495: Special Topics in Computing  
Prerequisite: COMP 200  
(3 credits)  
This course will present a very active area of study in the computing domain i.e. Mobile Computing. This course will be an introduction to the theory and practice of mobile application design and programming. Programs will mostly be written using Android or XNA platform.

Section A  
Monday, Wednesday, Friday 09:00-09:50  
S-120  
S. Shahid
**CSCS 100: Introduction to Computing** (3 credits)

*Not open to students registered in the BS (Computing) program*

An introduction to the computer science discipline, including an introduction to computing environments, general application software, computing hardware, operating systems, desktop publishing, internet, software applications and tools, and computer usage concepts. Introducing software engineering and information technology within the broader domain of computing.

- **Section A**  Monday, Wednesday, Friday 08:00-08:50  S-319  S. Zehra
- **Section B**  Monday, Wednesday, Friday 09:00-09:50  S-319  Dr. A. Aziz
- **Section C**  Monday, Wednesday, Friday 10:00-10:50  S-319  N. Sheikh
- **Section D**  Monday, Wednesday, Friday 11:00-11:50  S-319  S. Zehra
- **Section E**  Monday, Wednesday, Friday 12:00-12:50  S-319  A. H. Zahid
- **Section F**  Tuesday, Thursday 08:00-09:15  S-319  Dr. N. Ashraf
- **Section G**  Tuesday, Thursday 09:30-10:45  S-319  Dr. A. Aziz
- **Section H**  Tuesday, Thursday 11:00-12:15  S-218  Dr. N. Ashraf
- **Section J**  Tuesday, Thursday 02:00-03:15  S-319  S. Mahmood

**CSCS 302: Theory of Automata** (3 credits)

Prerequisite: COMP 200

Mathematical models of computation, definition and properties of formal languages and grammars, finite automata, regular languages and regular expressions, pushdown automata and context free languages. Pumping lemmas and normal forms. Turing machines, Church’s Thesis, Halting Problem and undecidability. An overview of the theory of computational complexity.

- **Section A**  Tuesday, Thursday 11:00-12:15  S-316  N. Sheikh

**CSCS 350: Introduction to Artificial Intelligence** (3 credits)

Prerequisite: COMP 200

This course focuses on the set of computational tools and techniques which mimic the human decision-making process and capability.

- **Section A**  Tuesday, Thursday 02:00-03:15  S-218  Z. Shah

**CSCS 440: Systems Programming** (3 credits)

Prerequisite: COMP 301, CSCS 323

The course will demonstrate mastery of the internal operation of system software including assemblers, loaders, macro-processors, interpreters, inter-process communication.

- **Section A**  Tuesday, Thursday 08:00-09:15  S-218  S. Shahid
CSCS 453: Computer Graphics  (3 credits)
Prerequisite: COMP 200, MATH 103
Graphic hardware including display devices. Applications of computer graphics. Development of
graphics software. Interactive graphics programming, Raster scan conversion algorithms for
Line segments. Circles, Ellipses and General curves, 2D Transformations, Windowing and
Clipping including panning and zooming. Line clipping and area clipping algorithms, Region
filling algorithms. 3D Objects display techniques, 3D Representations. 3D Transformations.
Curve and surface design and Representations. Rendering, Shading and Animation.

Section A  Tuesday, Thursday 09:30-10:45  S-120  Dr. Sarmad

CSIT 313: Database Administration  (3 credits)
Prerequisite: COMP 205 and COMP 213
The course will cover installation and configuration of database systems. Database backup and
maintenance. Performance analysis, monitoring and tuning. Access control and user
management. Management of competing application.

Section A  Tuesday, Thursday 02:00-03:15  S-120  S. Anwar

CSIT 400 / CSSE 405: Human Computer Interaction  (3 credits)
Prerequisite: COMP 205 and COMP 220
Uses insights form psychology and cognitive science to explore the differences in information
processing by humans and machines. Focuses on the design of human-computer interfaces
and systems involving both human and computer components.

Section A  Tuesday, Thursday 11:00-12:15  S-219  S. Mahmood

CSSE 301: Software Engineering II  (3 credits)
Prerequisite: COMP 220
The course aims to provide the basis of the object oriented approach to software engineering,
and basic concepts of agile methodologies, risk management, configuration management, re-
engineering and quality assurance. The focus of this course is on UML based development of
artifacts which include domain models, system sequence diagrams, contracts, real use cases,
interaction diagrams supported by GRASP patterns, and class diagrams.

Section A  Monday, Wednesday, Friday 09:00-09:50  S-317  S. Zehra

CSSE 400: Software Project Management  (3 credits)
Prerequisite: CSSE 351
An opportunity to develop the ability to plan and manage software development projects
successfully, maximizing the return from each stage

Section A  Monday, Wednesday, Friday 11:00-11:50  S-317  S. Mahmood
ECONOMICS

ECON 100: Basic Economics (3 credits)
This is a basic course of Economics for all disciplines, which would educate students about micro as well as macro economics. The course shall help students to increase understanding about basic concepts of Economics such as demand, supply, allocation of resources, opportunity cost, national income, inflation and unemployment etc.
Note: those students who have not studied Economics at FA/F.Sc or O. Level/ A. Level, they must take this course before registering ECON 101 and ECON 102. this course is counted towards General Education credits Economics seniors and juniors are not allowed to register this course.

Section A  Monday, Wednesday, Friday 11:00-11:50  E-213  M. S. Ayyubi
Section B  Tuesday, Thursday 09:30-10:45  E-202  Dr. B. Aziz
Section C  Monday, Wednesday, Friday 10:00-10:50  E-214  M. S. Ayyubi
Section D  Monday, Wednesday, Friday 12:00-12:50  E-213  Ayesha Anwar
Section E  Monday, Wednesday, Friday 09:00-09:50  E-202  Dr. R. Ahmed
Section F  Monday, Wednesday, Friday 02:00-02:50  E-202  Ayesha Anwar
Section G  Monday, Wednesday, Friday 02:00-02:50  E-214  Dr. M. Akbar
Section H  Monday, Wednesday, Friday 12:00-12:50  E-202  Dr. M. Akbar
Section J  Tuesday, Thursday 02:00-03:15  E-202  Ayesha Anwar

ECON 101: Microeconomics I (3 credits)
Microeconomics I is a core course for majoring in Economics. It introduces the students to the basic method and subject matter of microeconomics. The course covers consumer behavior theory; Producer theory; Cost theory; Output and price strategies under perfect and imperfect competition market structure.
Note: An important objective of the course is to provide a base for other courses to be taken for major in Economics.

Section A  Monday, Wednesday, Friday 10:00-10:50  E-221  Dr. R. Ahmed
Section B  Tuesday, Thursday 09:30-10:45  E-214  Dr. R. Martin
Section C  Monday, Wednesday, Friday 12:00-12:50  E-221  Dr. R. Ahmed
Section D  Tuesday, Thursday 09:30-10:45  E-213  Dr. R. Aslam

ECON 102: Macroeconomics (3 credits)
The primary goal of this course is to introduce key macroeconomics concepts. This course emphasizes national income accounting and determination through Keynesian cross. Consumption, saving and investment theories; Money supply and demand; QTM, inflation and unemployment; And the short period fluctuations in an economy and stabilization policies.
Note: An important objective of the course is to provide a base for other courses to be taken for major in Economics.

Section A  Monday, Wednesday, Friday 11:00-11:50  E-221  S. A. Abbas
Section B  Tuesday, Thursday 02:00-03:15  E-213  M. S. Ayyubi
Section C  Tuesday, Thursday 11:00-12:15  E-214  S. A. Abbas
Section D  Monday, Wednesday, Friday 12:00-12:50  E-214  Dr. M. Aslam
ECON 103: Mathematics for Economists (3 credits)
The nature of mathematical economics; Real number system, Set theory and economics, Comparative static analysis, Linear models and matrix algebra, Tools of algebra and calculus, Application of calculus in economics, Tools of comparative static, Optimization of one and multivariable functions and its economic application and Optimization with constraints.

Section A  Monday, Wednesday, Friday 11:00-11:50  E-214  G. Shabbir
Section B  Monday, Wednesday, Friday 09:00-09:50  E-214  A. Batool

ECON 201: Microeconomics II (3 credits)
Prerequisite: ECON 101 and 103
A continuation of Microeconomics I using mathematical models to analyze consumer theory, producer theory, firm behavior under perfect and imperfect market structure. Input markets with both perfect and imperfect competition. Game theory.

Section A  Monday, Wednesday, Friday 10:00-10:50  E-213  Dr. B. Aziz
Section B  Monday, Wednesday, Friday 09:00-09:50  E-213  Dr. B. Aziz

ECON 202: Macroeconomics II (3 credits)
Prerequisite: ECON 102 and 103
This course emphasizes the Classical and Keynesian economic theory policy; Derivation of AD and AS models and their implication for stabilization policies, Short term and long term inflation-unemployment relationship; Consumption and investment theories and Economic growth, Growth accounting and convergence.

Section A  Monday, Wednesday, Friday 09:00-09:50  E-221  S. A. Abbas
Section B  Monday, Wednesday, Friday 10:00-10:50  E-203  Dr. M. Aslam

ECON 203: Statistics for Economists (3 credits)
Descriptive statistics, Measurement of central tendency and dispersion, Random variable and discrete and continuous probability distributions, Sampling and sampling distribution, Estimation and confidence interval of small and large sample, Maximum likelihood, Hypothesis testing using one and two sample and Analysis of variance.

Section A  Monday, Wednesday, Friday 11:00-11:50  E-203  Luqman Saeed
Section B  Tuesday, Thursday 11:00-12:15  E-202  Luqman Saeed

ECON 300: Fundamentals of Econometrics (3 credits)
Prerequisite: ECON 201,202 and 203
Nature and methodology of Econometrics, Regression analysis and ordinary least squares, Dummy variable regression models, Relaxing the assumption of classical model, Multicollinearity, Hetroscedasticity and Autocorrelation, WLS and GLS, Model specification and diagnostic testing.

Section A  Tuesday, Thursday 11:00-12:15  E-213  Dr. M. A. Bhatti
Section B  Tuesday, Thursday 12:30-01:45  E-214  Dr. M. Akbar
ECON 302: Research Methods and Computer Applications  (3 credits)
Prerequisite: ECON 300
Methods and methodologies of research used in Economics; Techniques of investigation; Data collection methods; Research design; Sampling; Report writing and use of econometric softwares.

Section A  Monday, Wednesday, Friday 09:00-09:50  E-203  A. J. Khan
Section B  Tuesday, Thursday 02:00-03:15  E-221  A. J. Khan

ECON 303: Environmental Economics  (3 credits)
Prerequisite: ECON 201
Efficiency and Welfare, Property rights, Externalities and Environmental problems their Solutions and Benefit-cost Analysis of Pollution Control. The command and Control policy framework with reference to Pakistan; Efficient Policy Responses; Cost-effective policies; Development, Poverty and Environment, Sustainable Development.

Section A  Tuesday, Thursday 12:30-01:45  E-213  Dr. R. Martin
Section B  Monday, Wednesday, Friday 11:00-11:50  E-202  U. Hanif
Section C  Monday, Wednesday, Friday 02:00-02:50  E-221  U. Hanif

ECON 307: International Trade Theory and Policy  (3 credits)
Prerequisite: ECON 201 and 202
Theories of absolute and comparative advantage; Hecksher-Ohlin and Rybsynsky theorem; Factor endowments; Factor intensities; Factor prices and distribution; Tariffs, quotas and dumping; Imperfect competition and returns to scale; Commercial policies their objectives and impacts; Trade agreements and trade control.

Section A  Monday, Wednesday, Friday 02:00-02:50  E-213  G. Shabbir
Section B  Tuesday, Thursday 12:30-01:45  E-221  G. Shabbir

ECON 309: Econometric Methods  (3 credits)
Prerequisite: ECON 300
Nonlinear regression models, Approaches to estimating nonlinear models, Qualitative response regression models; LPM, Logit, Probit. Panel data regression models, fixed effect approach and random effect approach. Simultaneous-Equation models; the simultaneous equation bias, Identification problem Approaches to estimation: ILS, 2SLAS.

Section A  Tuesday, Thursday 09:30-10:45  E-221  Z. Iqbal
Section B  Tuesday, Thursday 11:00-12:15  E-221  Z. Iqbal

ECON 311: Development and Growth Economics  (3 credits)
Prerequisite: ECON 202
Economics, Institutions and development; Diverse structures and common characteristics; Measurement of economic development models: classic and modern, Economics development and issues of poverty, inequality, population, urbanization education and health. Agriculture and rural development, Growth models of Harrod-Domer, Solow-Swan Kaldor and Joan Robinson. New growth theories.

Section A  Tuesday, Thursday 12:30-01:45  E-203  Dr. M. Aslam
Section B  Monday, Wednesday, Friday 02:00-02:50  E-203  Dr. R. Aslam
Section C  Monday, Wednesday, Friday 10:00-10:50  E-202  Dr. A. Hussain
ECON 313: Monetary Theory
(3 Credits)
Prerequisite: ECON 202
Nature of monetary economics, money supply process and definition of monetary aggregates. Theories of money demands, microeconomics determinants of demand for money, testing the demand for money, the weakness of the links between the theory of the demand for money and the testing of it. Monetary transmission mechanism. Price surprise central banking and the Money supply.

Section A  Tuesday, Thursday 08:00-09:15  E-203  Dr. T. Ahmed
Section B  Tuesday, Thursday 02:00-03:15  E-203  Dr. T. Ahmed

ECON 402: Project Planning and Appraisal
(3 credits)
Prerequisite: ECON 201
Concepts used in project preparation, feasibility and evaluation such as discounting, field surveys, measurements, data analysis, and report writing. Sources of finance for development projects.

Section A  Tuesday, Thursday 09:30-10:45  E-203  U. Hanif
Section B  Tuesday, Thursday 11:00-12:15  E-203  A. J. Khan

ECON 406: Introduction to Game Theory
(3 credits)
Prerequisite: ECON 201
Non-cooperative game theory and its applications to economics; theory of static and dynamic games under perfect and imperfect information; refinements of Nash equilibrium.

Section A  Tuesday, Thursday 08:00-09:15  E-202  A. Batool
Section B  Tuesday, Thursday 12:30-01:45  E-202  A. Batool
UNIV 100: Foundation of University Education (3 credits)
(Not open for online Registration)

Prerequisites:
Lang 110 (or exempted from the Language Program)

This course is especially designed for university freshmen. All entering students must take University 100 during their first semester or after they have finished the Lang program. This course helps them to make the best use of their years of the university study at FC College (University). Each student will become more aware of his or her strengths and weaknesses in learning by working on a variety of skills. By examining their values and developing learning strategies this course will help students become successful in FCC’s liberal arts program. Transfers with 60 or more credits are exempt.

Section A  Tuesday, Thursday 08:00-09:15  S-424  Dr. K. Z. Rasib
Section B  Tuesday, Thursday 08:00-09:15  E-121  S. Ahmed
Section C  Monday, Wednesday, Friday 12:00-12:50  E-103  B. Hussain
Section D  Tuesday, Thursday 08:00-09:15  S-119  Dr. S. Jelani
Section E  Monday, Wednesday, Friday 09:00-09:50  E-119  Dr. M. Al Rashida
Section F  Tuesday, Thursday 11:00-12:15  S-216  S. Azeem
Section G  Monday, Wednesday, Friday 09:00-09:50  S-316  S. Anwar
Section H  Monday, Wednesday, Friday 12:00-12:50  S-316  N. Sheikh
Section J  Tuesday, Thursday 11:00-12:15  E-323  Dr. R. Zia
Section K  Monday, Wednesday, Friday 09:00-09:50  E-323  Dr. N. Langah
Section L  Tuesday, Thursday 11:00-12:15  E-104  L. Masih
Section M  Tuesday, Thursday 11:00-12:15  E-227  K. Sharullah
Section N  Monday, Wednesday, Friday 12:00-12:50  E-227  Z. Jamil
Section P  Tuesday, Thursday 08:00-09:15  S-412  Dr. Y. Bangash
Section Q  Monday, Wednesday, Friday 09:00-09:50  S-016  K. Jawad
Section R  Tuesday, Thursday 08:00-09:15  N-209  M. A. Soomro
Section S  Tuesday, Thursday 11:00-12:15  N-209  F. Mahmood
Section T  Monday, Wednesday, Friday 09:00-09:50  S-425  Dr. W. Hussain
Section U  Tuesday, Thursday 11:00-12:15  S-120  Dr. S. Malik
Section V  Monday, Wednesday, Friday 12:00-12:50  S-417  K. Azhar
Section W  Tuesday, Thursday 11:00-12:15  S-417  Dr. S. Aslam
Section X  Monday, Wednesday, Friday 12:00-12:50  S-216  Dr. S. Zaheer
Section Y  Monday, Wednesday, Friday 09:00-09:50  N-213  Dr. M. Younis
Section Z  Monday, Wednesday, Friday 12:00-12:50  N-213  S. N. Sindhu
Section AA  Tuesday, Thursday 08:00-09:15  E-122  A. Ur Rehman
Section CC  Tuesday, Thursday 08:00-09:15  N-213  Dr. M. Aslam
Section DD  Monday, Wednesday, Friday 09:00-09:50  N-209  N. Mushtaq
Section EE  Tuesday, Thursday 11:00-12:15  N-213  S. Ayub
EDUC 110: Foundations of Education  (3 credits)
Perspectives on Economic, Cultural, Political, Ideological, Philosophical, Aesthetic and Psychological foundations of education. The history of education in Pakistan will also be covered.

Section A  Tuesday, Thursday 11:00-12:15  N-217  Dr. Dubash
Section B  Monday, Wednesday, Friday 10:00-10:50  E-323  A. Rashid

EDUC 120: Educational Psychology  (3 credits)
Principles of Psychology as applied to the educational process; Characteristics of the individual learner, the teacher, the classroom, methods and other relevant factors in the learning process; Various stages of growth and development; Brief introduction to psychological measurements and creativity in children.

Section A  Monday, Wednesday, Friday 12:00-12:50  E-323  M. A. Arshad

EDUC 300: Instructional Methods and Strategies  (3 credits)
Types of instructional methods and assessment strategies and best uses of each, discussions and practice in choosing and planning for the appropriate instructional methods, classroom arrangements and management for each instructional method.

Section A  Tuesday, Thursday 12:30-01:45  N-217  Dr. Dubash

EDUC 315: Learning Theories  (3 credits)
Prerequisites: EDUC 110
Cognitive development, learning facilitation, social perspectives, intelligence; works of Maslow, Pavlov, Skinner, Erikson, Piaget, Vygotsky, Burner, Wiener, Gagne and Gardener.

Section A  Monday, Wednesday, Friday 11:00-11:50  E-323  A. Rashid

EDUC 320: Introduction to Research Methods in Education  (3 credits)
Prerequisite: EDUC 110, STAT 101
Concepts and methods in research as applied to education; quantitative and qualitative research; criteria and procedures for selecting a problem; research methodologies with application for real life.

Section A  Tuesday, Thursday 08:00-09:15  E-323  M. A. Arshad

EDUC 373: Teaching Reading  (3 credits)
Methods of teaching reading; classroom management for teaching individuals and small groups; methods of assessment for determining reading levels and progress of students; flexible grouping and scheduling for a variety of school situations and age groups.

Section A  Tuesday, Thursday 02:00-03:15  E-323  C. Burke
### ENGLISH

**ENGL 101: Writing and Grammar**  (3 credits)
Use of grammar structures in meaningful spoken and written communication; develop writing skills in organizing ideas, creating topic sentence, organizing paragraphs, using examples and details to support main ideas; making transitions; editing revising and proofreading.

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<td>W. Azeem</td>
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<td>A. Maqbool</td>
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<td>Section F</td>
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**ENGL 102: Communication Skills**  (3 credits)
Emphasis will be on the development of basic conversational skills, identifying the main ideas of conversations, lectures, and other spoken texts; recognizing and understanding stressed and reduced sounds in words and sentences; practice deriving the meaning of new words from the context, making inferences from what is heard, and basic note-taking skills for participating successfully in social conversation and academic discussions; improving pronunciation.

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<td>R. Jalal</td>
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**ENGL 103: Advanced Writing Skills**  (3 credits)

*Prerequisite: ENGL 101*

Helps students to perfect their skills in writing well-developed, coherent paragraphs and short essays with special attention to editing grammar. Proficiency in the skills of academic writing. Complex sentence structure and the relationship among sentences in extended texts. Common rhetorical forms will be practiced: Narration, Process description, Classification, Course-effect, and comparison and contrast.

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**ENGL 104: History of Literature**  (3 credits)

The course focuses on various ages and movements that have influenced literature over centuries. This historical survey helps to analyze the social and cultural background to literature in English in the West.

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**ENGL 201: Introduction to English Literature**  (3 credits)

Basic questions on the nature and function of literature and how to interpret, discuss and evaluate literary texts through a diverse and rich variety of selections from English and American literature.

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<td>Dr. N. Langah</td>
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<td>Dr. W. Anwar</td>
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**ENGL 204: English Prose-I**  (3 credits)

This course will give an overview of English non-fiction. A selective survey of representative works of (non-fiction) prose in order to create a critical understanding of what distinguishes one form of writing form another; the impact of the times and movements that bring about change in a writer’s form, thought and style.

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<td>Dr. I. Hassan</td>
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</table>
ENGL 207: Media and Literature  
(3 credits)
The focus of the course is to highlight the role of media as a means of understanding literature. It will also explain the importance of language and literature with reference to specific social and cultural issues regarding the role of media.

Section A  
Tuesday, Thursday 08:00-09:15  
E-332  
Dr. N. Langah

ENGL 214: English novel: A General survey  
(3 credits)
This course will offer an overview of prominent English Novelists. The students will read the Novels from the point of view of current literary criticism and learn to appreciate the themes of different English novels both in their historic milieu and from the perspective of current language philosophies.

Section A  
Monday, Wednesday, Friday 12:00-12:50  
E-332  
F. Zaheer

ENGL 215: Literary Theory  
(3 credits)
This course aims at analyzing texts through modern critical theories for research purposes.

Section A  
Tuesday, Thursday 02:00-03:15  
E-231  
Dr. K. Ud Din

ENGL 216: Language and Literature  
(3 credits)
Literature is read and discussed from representation to image. The student reads selections from world literature learning to associate the images created by the writer or translator with the English language structure, vocabulary and grammar.

Section A  
Monday, Wednesday, Friday 08:00-08:50  
E-332  
A. Maqbool

ENGL 303: Introduction to Linguistics  
(3 credits)
Theoretical concepts and empirical findings of modern linguistics on a non-technical level. Highlights the connection between linguistics and other disciplines and looks at how the study of language opens up new dimensions in the understanding of related disciplines.

Section A  
Monday, Wednesday, Friday 09:00-09:50  
E-332  
A. Waseem

ENGL 307: Drama I  
(3 credits)
A critical awareness of drama as a genre or a tradition with focus on its mutation from classical to Elizabethan age onwards. It will further highlight what classical models are followed to make a play a “well-written” play.

Section A  
Monday, Wednesday, Friday 10:00-10:50  
E-332  
Dr. I. Hassan

ENGL 309: Modern Poetry  
(3 credits)
This course attempts to analyze the purpose and scope of the 20th century modern poetry. It will discuss the global political, social and cultural influences on modern poetry and explain how this poetry deals with themes and techniques that highlight a unique poetic experience.

Section A  
Monday, Wednesday, Friday 11:00-11:50  
E-332  
N. Alam
ENGL 315: English Poetry I  (3 credits)
A detailed student of English poetry focusing on Classical and Neo-Classical poets. The course will inform about the radiant traditions in classical forms of English poetry.

Section A  Tuesday, Thursday 12:30-01:45  E-231  Dr. K. Ud Din

ENGL 401: Modern Drama  (3 credits)
Pre-Requisite: ENGL 210 or ENGL 307
A critical examination of major writers of modern drama such as Brecht, Beckett, Miller and Pinter with particular reference to themes such as absurdist, naturalism, expressionism and “political” drama.

Section A Tuesday, Thursday 11:00-12:15 English Seminar Room Library Dr. W. Anwar

ENGL 403: Contemporary Literary Criticism  (3 credits)
This course specifically focuses on the latest trends in literary criticism and theory. With their background in classical theoretical concepts, the students will learn how the contemporary literary criticism influences and interprets with diverse literary genres.

Section A  Monday, Wednesday, Friday 02:00-02:50  E-332  Dr. W. Anwar

ENGL 404: English Poetry II  (3 credits)
Focuses on post-World War II poetry from various poetic traditions and emphasizes texts by contemporary world poets.

Section A  TBD  TBD  TBD  Dr. K. Ud Din

ENGL 407: Pakistani and Indian Literature in English  (3 credits)
This course offers a study of the sub continental Indo-Pak writers writing in English. In its own way the course deals with issues regarding identity and nationalism in relation to the colonial and post-colonial emerging conditions.

Section A  Tuesday, Thursday 11:00-12:15  E-332  F. Syeda
LANG 100: Language Skills I  
This course will make the students attain Interpersonal communication skills and enough reading and writing practice for them to move to LANG 110. Practice in all four language skills will be a daily routine. Supplementary materials will be used to improve vocabulary and comprehension.

Section A  
Monday to Thursday  
08:00-10:30  
N-214  
F. Nagi

Friday  
08:00-09:30  
N-214

Section B  
Monday to Thursday  
10:30-01:00  
N-214  
Z. Naqvi

Friday  
09:30-11:00  
N-214

LANG 110: Language Skills II  
Advanced grammar, vocabulary, reading and writing will be introduced to bring the students to a level where they will fit into the regular University program and fare well.

Section A  
Monday to Thursday  
10:30-01:00  
N-208  
S. Sylvan

Friday  
09:30-11:00  
N-208

Section B  
Monday to Thursday  
10:30-01:00  
N-215  
A. Gill

Friday  
09:30-11:00  
N-215

Section C  
Monday to Thursday  
01:00-03:30  
N-215  
N. Hanif

Friday  
11:00-12:30  
N-215
GEOGRAPHY

GEOG 101: Fundamentals of Geography (3 credits)
Builds perspective about Geography as a discipline, familiarizes its thematic domains and fundamental concepts.

Section A  Monday, Wednesday, Friday 09:00-09:50  E-227  Z. Jameel
Section B  Tuesday, Thursday 09:30-10:45  A-002  K. Shafique
Section C  Monday, Wednesday, Friday 12:00-12:50  E-227  K. Shakrullah

GEOG 133: Geographical Profile of Pakistan (3 credits)
It relates to major features of the physical environment, resources, culture, communications and trade of Pakistan. Analyses the major problems confronted by Pakistan relating to cross cultural relationship, socio-economic viability, environmental conservation, resource sustainability and development.

Section A  Monday, Wednesday, Friday 09:00-09:50  A-002  S. A. Umar

GEOG 210: Earth’s Physical Realms (3 credits)
This course deals with spatial and functional dynamics of major physical phenomena relating to the planet Earth – its evolution, interior state, atmosphere, lithosphere hydrosphere and ecosphere. It further explores physical phenomena and related cycles and man-environment interactions.

Section A  Tuesday, Thursday 11:00-12:15  A-002  K. Shafique

GEOG 220: Human Domains of Geography (3 credits)
The course focuses on concepts relating to the spatial and systematic organization of economic, cultural, political, demographic and occupancy milieu, arising out of human use of the earth’s environment. It also deals with the importance of human attitudes and values in resource use and shaping of the patterns.

Section A  Monday, Wednesday, Friday 10:00-10:50  E-227  K. Shakrullah

GEOG 221: Geography of Tourism (3 credits)
Focus is on physical and cultural factors affecting the location & relative importance of recreational areas and tourist attractions. Spatial analysis of tourist flows, modes of transportation, effects on regional economics and impacts on environment.

Section A  Monday, Wednesday, Friday 11:00-11:50  A-002  S. A. Umar

GEOG 274: Fundamentals of Cartography and Field Surveying (3 credits  (2+2)
The course develops basic skills of map making their use and contemplation techniques. As well, train students in collection and processing of field data. It also includes basic training in field surveying for map making.

Section A  Tuesday, Thursday 12:30-02:10  A-002  Z. Jamil
GEOG 313: Geodynamics and Geomorphology  
Prerequisite: GEOG 101 OR 210 
The course provides comprehension about geostructuring, Isostatic balancing, Geotectonics and modulation; Processes, Agencies and cycles of landscape sculpturing and evolution, including their temporal and spatial variations.

Section A  Monday, Wednesday, Friday 10:00-10:50  A-002  K. Shafique

GEOG 325: Political Geography  
The course emphasizes on the comparative study of global political regions and related systems. Varied approaches are explored such as power analysis, Genetic analysis, Functional analysis, Thematic analysis and Ethnic analysis of political units.

Section A  Tuesday, Thursday 09:30-10:45  E-227  S. A. Umar

GEOG 421: Cultural Geography  
Prerequisite: GEOG 220 or instructor permission 
It deals with the patterns and processes of the world cultural realms such as language, religion, social traits and ethnicity serving as foci for an in-depth understanding of the world and its people and cross-cultural interactions.

Section A  Monday, Wednesday, Friday 02:00-02:50  A-002  S. A. Umar

GEOG 471: Qualitative and Quantitative Techniques in Geography  
Prerequisite: Basic knowledge of computer software application or instructor consent permission 
The course provides the information on qualitative methodologies and quantitative techniques used by geographers in analysis and synthesis of systematic spatial phenomena. Application of statistical methods and thematic models for geographical analysis including the use of computer software and hand-on experience.

Section A  Tuesday, Thursday 02:20-04:00  E-227  K. Shakrualah

GEOG 474: Geographical Information Sciences  
Prerequisite: GEOG 371, GEOG 374 
The course relates to principles of geographical information science, functions of geographic information systems, relationship between GIS and remote sensing.

Section A  Monday, Wednesday, Friday 11:00-11:50  E-227  Z. Jamil
Lab:  Thursday 10:00-11:40  TBD

GEOG 499A: Directed Project  
Prerequisite: (For Only Senior Students) Knowledge of computer software applications or instructor consent permission. 
A session on orientation/hands-on training in techniques of project planning, Designing, Operational management, Report preparation and Presentation after Junior Year followed by independent/participative research in field, Laboratory, or Library under the direction of a member of Geography faculty appointed by the chair) and preparation and presentation of research report/thesis.

Section A  Monday, Wednesday, Friday 12:00-12:50  A-002  TBD
HEALTH AND PHYSICAL EDUCATION

HPED 101: Cricket (for boys)  (1 credit)
The course of Cricket is both an art and science. It involves techniques of batting, bowling, fielding, and running. All these activities have often to be performed at speed agility and endurance. These individual skills are very important but it should not be forgotten that it is a team game and the players have to work together in offence or defense. The course of Cricket contains physical challenges.

Section A  Tuesday, Thursday 11:00-11:50  L. Centre  S.Nazir

HPED 102: Football (for girls)  (1 credit)
Day by day females are also taking interest to learn & play football. In its skill techniques involve dribbling, running, passing, kicking, tackling, heading and controlling the ball. Students will learn defense & offense with the coordination of physical fitness components.

Section A  Tuesday, Thursday 01:00-01:50  E-103  Hira Atta

HPED 103: Hockey (for boys)  (1 credit)
This course of Hockey is knowledge about the basic rules and regulations. It involves the technique of passing, dribbling, dodging, and pushing with agility, speed and endurance. The course aims to equip them with the necessary knowledge of the game.

Section A  Monday, Wednesday 10:00-10:50  E-103  B. Kamil

HPED 108: Table Tennis (for girls)  (1 credit)
Table tennis can be played on an individual or a doubles basis. The course aims to teach and equip students with all the necessary knowledge and skills to play for recreation or competition.

Section A  Monday, Wednesday 01:00-01:50  E-103  Hira Atta
HISTORY AND PAKISTAN STUDIES

PKST 101: Pakistan Studies (Compulsory)  (3 credits)
The Ideology of Pakistan, the Aligarh movement, the Two-Nation theory, Pakistan movement, important events and the creation of Pakistan. Initial problems of Pakistan, constitutional development, Islamization in Pakistan. Land of Pakistan, economic and industrial development in Pakistan. The Islamic World and Pakistan.

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HIST 101: Survey of South Asia  (3 credits)
History of South Asia from the Indus Valley Civilization to the modern day, with a focus on historical periods and themes.

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HIST 255: The Indus Valley Civilization  (3 credits)
The course will study the Indus Valley Civilization focusing on the origin, its main features and causes of its decline. Exploring in depth the relationship of the advent of the Aryans with the Indus Valley Civilization, including the latest research and academic debates on this topic. Familiarization with archeological methods.
(A Field trip to Harappa).

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HIST 302: Survey of Modern Europe  (3 credits)
The geography, culture, social and political history of Europe, highlighting personalities events and analyzing the politics. A study of the French Revolution, the Eastern question, the unification of Italy and Germany. A study of the forces of nationalism, imperialism and totalitarianism as well as Europe’s interaction with non-western cultures. Foreign policy of the big powers.

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HIST 303: Modern International Relations since 1914  (3 credits)
International relations between the global powers and the rest of the world, highlighting events personalities and was in different continents of the world. Special emphasis will be laid on the period between the two world wars. A study of the role and the foreign policies of the big powers (Britain and the United States).

Section A  Tuesday, Thursday 11:00-12:15  S-213  Dr. Y. K. Bangash

HIST 304: History of the United States  (3 credits)
The American Revolution, the early national experience and the Civil War. A study of reconstruction, westward expansion, the development of political parties, diplomacy and economic development.

Section A  Monday, Wednesday, Friday 11:00-11:50  S-212  Dr. A. Syeda

HIST 402: Mughal Rule in India  (3 credits)
The state and society under the Mughal rule; the central and provincial administration, the military, economic development, art and culture.

Section A  Tuesday, Thursday 09:30-10:45  S-213  Dr. A. Syeda

HIST 405: Modern Muslim World (1945-2008)  (3 credits)
Modern history of Middle East: turkey, Egypt, Saudi Arabia, Iran, Syria and Iraq.

Section A  Tuesday, Thursday 12:30-01:45  S-212  K. Jawad
MASS COMMUNICATION

**MCOM 100: Fundamentals of Speech**  
(3 credits)  
Study of the basic principles and practices of good vocal production and oral communication. Examines texts, verse and prose in terms of vocal delivery. Explores the basic components of communication through analysis and practice in a variety of oral presentations. Focus is on English speaking skills.

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**MCOM 101: Introduction to Journalism**  
(3 credits)  
Brief introduction to print electronic and online journalism, types of journalism, news organization, basics of reporting and editing, contents of newspaper, television and radio.

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**MCOM 103: Introduction of PR & Advertising**  
(3 credits)  
Advertising and its role in the society, consumer culture, advertising and mass media marketing, public relations Selling and sales management. Process and tools of PR.

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MCOM 201: News Reporting  
**Prerequisite: MCOM 101**
Mechanics, elements, value and structure of stories for print and electronic media; news sources for print and electronic media; Qualifications and functions of a reporter; Basics of camera and microphone reporting; Interpretative and investigative reporting, Reporting beats and interview techniques.

- **Section A**  
  Monday, Wednesday, Friday 12:00-12:50  
  E-333  
  M. Ali

- **Section B**  
  Monday, Wednesday, Friday 02:00-02:50  
  E-333  
  M. Ali

MCOM 202: Sub-Editing  
**Prerequisite: MCOM 101**
Introduction, importance and process of the sub-editing; functions and qualifications of a sub-editor; source of news; techniques, types and new trends in headlines; technique, types, and new trends in make up; monitoring importance and techniques of radio and television; importance and techniques of picture editing and caption writing for pictorial display; journalistic terminologies.

- **Section A**  
  Monday, Wednesday, Friday 11:00-11:50  
  E-228  
  M. Ali

MCOM 203: Media and Peace Building  
**Prerequisite: MCOM 101**

- **Section A**  
  Monday, Wednesday, Friday 09:00-09:50  
  E-333  
  F. Jabeen

- **Section B**  
  Monday, Wednesday, Friday 10:00-10:50  
  E-333  
  F. Jabeen

MCOM 301: Press Laws and Ethics  
**Prerequisite: MCOM 201**
Evolution of press laws with special reference to the Sub-continent and Pakistan. A critical analysis of the current press and publication regulations; PEMRA laws pertaining to the electronic media in Pakistan; Freedom of expression; Defamation laws; Contempt of Courts; Contemporary trends in copyright law and the concept of intellectual property rights; Code of ethics for journalists from Western and Islamic Perspectives.

- **Section A**  
  Tuesday, Thursday 08:00-09:15  
  E-228  
  S. Mushtaq

- **Section B**  
  Monday, Wednesday, Friday 12:00-12:50  
  E-228  
  S. Mushtaq
MCOM 302: Opinion Writing  
Prerequisite: MCOM 201  
Contents and importance of editorial page; definitions and functions of editorial writing; qualification of editorial writers; topic selection, sources of material, types and structure of editorials; importance and selection of letters to the editor; definitions, structure types and importance of column and feature.

Section A  
Tuesday, Thursday 12:30-01:45  
E-333  
S. Mushtaq

MCOM 303: Public Relations  
Prerequisite: MCOM 103  
Definition and purpose; tools of public relations in Pakistan; duties of a PR organization; definition and basic ingredients of a press release, press note, handout, press communiqué and press conferences; structure and functions of DGPR.

Section A  
Tuesday, Thursday 08:00-09:15  
E-333  
A. Muzamill
Section B  
Tuesday, Thursday 09:30-10:45  
E-333  
A. Muzamill

MCOM 304: Principles of Advertising  
Prerequisite: MCOM 103  
Definition, scope, function, essentials and economic aspects of advertising. Advertising in Pakistan; advertising as a tool of marketing; advertising research; introduction to prominent advertising agencies of the world; advertising campaigns and their evaluation.

Section A  
Tuesday, Thursday 02:00-03:15  
E-230  
F. Mahmood
Section B  
Tuesday, Thursday 03:30-04:45  
E-230  
F. Mahmood

MCOM 305: Magazine Journalism  
Prerequisite: MCOM 201  
Introduction, scope and types of magazine; prospects and challenges of magazine journalism in Pakistan; writing for magazines; personality sketches, interviews and social round-ups; make-up and layout of magazines.

Section A  
Tuesday, Thursday 11:00-12:15  
E-333  
A. Muzamill

MCOM 306: Research Methodology  
Prerequisite: Only for junior students majoring in Mass Communications  
This course is specifically designed to provide the students an understanding of research methodology; concept of research; kinds of research; elements of research design; technique to prepare a research proposal.

Section A  
Tuesday, Thursday 11:00-12:15  
E-230  
Dr. H. Mian
Section B  
Tuesday, Thursday 12:30-01:45  
E-230  
A. Soomro
MCOM 310: Mass Communication Studies  
Prerequisite: MCOM 301  
Definitions, types, elements and models of communication and mass communication, features and functions of mass communication, media literacy, public opinion and propaganda, two-step flow of communication, barriers in communication, essentials of effective communication, gatekeeping and information control, the role of the opinion leader, current media trends, mass media and culture, mass media and society, mass media effects debates.

Section A  
Monday, Wednesday, Friday 02:00-02:50  E-230  S. Mushtaq

MCOM 402: Television: A Theoretical Introduction  
Prerequisite: MCOM 301  
Set-up and working of news; duties of a news producer; sources of TV news; TV news film; basics of news film shooting and editing; drafting of TV news; compilation of bulletins; preparation of network bulletins; students will submit 5 news reports and two interviews of ten minutes duration each on CDs / DVDs.

Section A  
Monday, Wednesday, Friday 10:00-10:50  E-230  Dr. S. Abbas  
Section B  
Monday, Wednesday, Friday 11:00-11:50  E-230  Dr. S. Abbas

MCOM 404: Community Journalism  
Prerequisite: MCOM 201  
Status and issues regarding women, children, minorities and human rights in the local community with special emphasis on Pakistan; media coverage; NGOs and mass awareness campaigns in Pakistan; role of mass media in reporting human rights events.

Section A  
Tuesday, Thursday 02:00-03:15  E-229  A. Muzamill

MCOM 407: Internship  
Only for MCOM Students (Seniors and Juniors Year)  
Prerequisite for internship CGPA 2.75  
An internship will allow students to experience first-hand functioning of media organizations; sub-editing techniques, reporting techniques of different beats such as parliament, sports, commerce, social services and courts, etc.

Section A  
Tuesday, Thursday 03:30-04:45  E-333  Dr. H. Mian

MCOM 409: Theories of Mass Communication  
Prerequisite: MCOM 301  
This course will discuss theories and models of Mass Communication.

Section A  
Monday, Wednesday, Friday 12:00-12:50  E-230  A. Mubeen
MATHEMATICS

MATH 100: Quantitative Skills (3 credits)
Basic algebra, percentage, profit, loss, commission, ratio, proportion, zakat deduction, unitary methods, time, velocity, distance, area and other real life applications of Mathematics. Mean, median, mode, data interpretation, introduction to probability.

Section A  Tuesday, Thursday 08:00-09:15  S-413  Dr. McCartney
Section B  Tuesday, Thursday 09:30-10:45  S-413  F. Jamil
Section C  Monday, Wednesday, Friday 10:00-10:50  S-413  K. Azhar
Section D  Monday, Wednesday, Friday 12:00-12:50  S-413  F. Jamil
Section E  Monday, Wednesday, Friday 02:00-02:50  S-412  Z. R. Bhatti
Section F  Tuesday, Thursday 02:00-03:15  S-412  F. Jamil
Section G  Monday, Wednesday, Friday 03:00-03:50  S-412  F. Jamil
Section H  Monday, Wednesday, Friday 03:00-03:50  S-413  Z. R. Bhatti

MATH 101: Pre-Calculus & Trigonometry (3 credits)
Fundamentals, equations and inequalities, Functions and graphs, polynomial, rational, exponential and logarithmic functions, Trigonometric functions and their graphs, Trigonometric identities, Solution of right and Oblique triangles. Matrices and their use in the solution of simultaneous equations. the solution of simultaneous equations.

Section A  Monday, Wednesday, Friday 08:00-08:50  S-412  M. Asghar
Section B  Monday, Wednesday, Friday 09:00-09:50  S-412  M. Asghar
Section C  Monday, Wednesday, Friday 10:00-10:50  S-412  M. Asghar
Section D  Monday, Wednesday, Friday 11:00-11:50  S-412  Dr. R. Ashraf
Section E  Monday, Wednesday, Friday 03:00-03:50  S-316  N. Shahid
Section F  Tuesday, Thursday 08:00-09:15  S-412  M. Asghar

MATH 102: Calculus-I (3 credits)
Prerequisite: MATH-101 or A-Level Mathematics or Intermediate Mathematics
Functions, graphs of functions, Translation, Stretching and compressing graphs, Lines, Limits, continuity, Differentiability and Integration with application, Introduction to definite integral, Introduction to parabola, Hyperbola and Ellipse.

Section A  Monday, Wednesday, Friday 11:00-11:50  S-413  K. Azhar
Section B  Monday, Wednesday, Friday 10:00-10:50  S-316  N. Shahid

MATH 103: Introductory Linear Algebra (3 credits)
Prerequisite: MATH-101 or A-Level Mathematics or Intermediate Mathematics
Matrices, Determinants, System of linear equations, Homogeneous and non-homogeneous system, Vector spaces, Subspaces, Linear independence, Basis and dimensions.

Section A  Tuesday, Thursday 11:00-12:15  S-413  Dr. M. Qureshi
Section B  Tuesday, Thursday 12:30-01:45  S-316  Dr. R. Ashraf
MATH 201: Calculus II  
Prerequisite MATH 102  
Maxima and minima of functions of one variable, The definite integral evaluation techniques, Theorems related to definite integrals numerical integration, improper integrals, area and arc length in polar coordinates, Volume & surface of revolution, infinite series; power series; Taylor’s theorem, Conic section, modeling with first O.D.E  
Section A  Monday, Wednesday, Friday 02:00-02:50  S-413  Dr. R. Ashraf

MATH 202: Ordinary Differential Equations  
Prerequisite MATH 102  
Section A  Tuesday, Thursday 02:00-03:15  S-413  Dr. M. Qureshi

MATH 203: Vector Analysis  
Prerequisite MATH 102  
Scalars and Vectors, Product of two Vectors (scalar and vector) with application, Product of more than two vectors, application of vector differentiation to differential Geometry and Mechanics, Divergence and Curl of a vector, Gradient of a Scalar Function and their applications, Ordinary Vector integration, Line Integrals and its application like Green’s theorem.  
Section A  Tuesday, Thursday 12:30-01:45  S-413  Dr. S. Malik

MATH 209: Linear Algebra  
Prerequisite: MATH 103 and MATH 102  
Section A  Tuesday, Thursday 11:00-12:15  S-412  Dr. W. Hussain

MATH 210: Set Theory  
Prerequisite: MATH 101 or Intermediate with mathematics or A-Level with Mathematics. Sets and Basic Operations on sets, Relations, Functions, Cardinal and Ordinal numbers, Axioms of Choice, zorn’s lemma, well-ordering theorem.  
Section A  Monday, Wednesday, Friday 12:00-12:50  S-412  Dr. S. Malik
MATH 304: Operations Research  (3 credits)
Prerequisite: MATH 103
Introduction to operations research, the simplex method, two phase method, M-method, Graphical solution, Sensitivity analysis, Primal dual relationship, Dual simplex method, Transportation model, Assignment models, Transshipment models, network models, Dijkstra's algorithm, Floyd's algorithm, Spanning Tree algorithm, Maximal Flow algorithm.

Section A  Tuesday, Thursday 09:30-10:45  S-412  K. Azhar

MATH 308: Differential Geometry  (3 credits)
Prerequisite: MATH 201
Course in plane and space, surfaces in three dimensions, Curvature of surfaces, the Gauss map, Geodesics, Minimal surfaces and the Gauss-Bonnet theorem.

Section A  Tuesday, Thursday 12:30-01:45  S-412  N. Shahid

MATH 309: Real Analysis  (3 credits)
Prerequisite: MATH 201
Sets and functions, the completeness property of $\mathbb{R}$, intervals, Sequences and their limits, convergent & divergent sequences, Convergence of monotone sequences, Limits of functions, Continuous functions, Uniformly continuous functions and differentiability.

Section A  Monday, Wednesday, Friday 08:00-08:50  S-413  Dr. McCartney

MATH 311: Topology and Metric Spaces  (3 credits)
Prerequisite: MATH 210
Metric spaces, Generalization of analysis, Topological spaces, Continuity, Compactness, Connectedness, Separation axioms, Compactification, Application to spaces of functions, completion of metric spaces.

Section A  Monday, Wednesday, Friday 09:00-09:50  S-413  Dr. McCartney
PHILOSOPHY

PHIL 101: Introduction to Philosophy (3 credits)
This course brings to the student a selection of the problems historically identified as philosophical along with the methods philosophers have used to solve these problems. Examples would be justice and moral order, evaluation and justification of belief human value and dignity. The emphasis is on identifying the problems that have bothered critical thinkers, followed by selective philosophical solutions and their authors.

**Section A**
Monday, Wednesday, Friday 09:00-09:50  E-121  Dr. M. Boone

**Section B**
Tuesday, Thursday 12:30-01:45  E-121  Dr. G. Irfan

**Section C**
Tuesday, Thursday 11:00-12:15  E-121  Dr. G. Irfan

PHIL 201: Philosophy Ancient Through Medieval (3 credits)
A study of the rise of critical thought in the pre-Socratic Greek world and its development through the issues related to deriving the morally right and individual significance by understanding the universe’s structure and function. The classic Platonic and Aristotelian worldviews are examined and evaluated by their Eastern and Western historical critics through the end of the medieval period.

**Section A**
Monday, Wednesday, Friday 11:00-11:50  E-121  Dr. G. Irfan

PHIL 221: Logic: How to Think Clearly (3 credits)
An examination of logic, including both stoic contributions as well as the systematic organization of the rules of right thinking developed by Aristotle and examined by Medieval and latter thinkers, make up the content of the course, with an added concern about the issues raised by J.S Mill and others who systematized inductive logic.

**Section A**
Monday, Wednesday, Friday 10:00-10:50  E-121  Dr. M. Boone

PHIL 231: Philosophy of Religion (3 credits)
This course identifies the set of issues that has dominated modern and contemporary concerns about religious thought. The problem of evil, the meaningfulness of God talk, the relevance of religion for moral and social justice, etc are typical topics that will be examined.

**Section A**
Monday, Wednesday, Friday 12:00-12:50  E-121  Dr. G. Irfan

PHIL 341: Epistemology (3 credits)
This course provides a critically analysis of the foundations of knowledge. Classical theories will be examined but the emphasis will be on recent trends in substantiating belief and defining knowledge.

**Section A**
Tuesday, Thursday 09:30-10:45  E-121  Dr. M. Boone
PHYSICS

PHYS 100: Introduction to Physics  (4 credits)
Scope of Physics, Kinematics and bodies in motion; communication, basic electricity medical physics and elements of astrophysics; laboratory: familiarization with measuring instruments and related experimentation.

Section A  Monday, Wednesday, Friday 08:00-08:50  S-007  Dr. Henderson
Lab:  Tuesday 10:00-11:50  S-029
Section B  Monday, Wednesday, Friday 09:00-09:50  S-007  Dr. S. Aslam
Lab:  Friday 02:00-03:50  S-029
Section C  Tuesday, Thursday 08:00-09:15  S-007  Dr. Henderson
Lab:  Thursday 10:00-11:50  S-029
Section D  Monday, Wednesday, Friday 12:00-12:50  S-109  Dr. Henderson
Lab:  Thursday 02:00-03:50  S-029
Section E  Tuesday, Thursday 09:30-10:45  S-109  S. A. Anwar
Lab:  Tuesday 02:00-03:50  S-029

PHYS 102: General Physics II  (4 credits)
Prerequisite: PHYS 101 OR F.Sc./A.Level Physics
Electricity, magnetism, DC and AC Current, modern Physics, Laboratory.

Section A  Tuesday, Thursday 02:00-03:15  S-007  Dr. S. Yasir
Lab:  Wednesday 02:00-03:50  S-016

PHYS 103: Mechanics  (4 credits)
Prerequisite: PHYS 100 or FSc or A level physics or equivalent.
Study of physical phenomena in mathematical terms; Statics and dynamics of particles and rigid bodies; oscillatory and rotary motion; gravitation and fluid mechanics, Laboratory.

Section A  Monday, Wednesday, Friday 12:00-12:50  S-016  Dr. S. A. Shah
Lab:  Monday 10:00-11:50  S-016
Section B  Tuesday, Thursday 11:00-12:15  S-027  Dr. S. Yasir
Lab:  Wednesday 10:00-11:50  S-027
Section C  Monday, Wednesday, Friday 02:00-02:50  S-027  Dr. F. Hameed
Lab:  Friday 10:00-11:50  S-027
Section D  Tuesday, Thursday 02:00-03:15  S-027  Dr. S. A. Shah
Lab:  Wednesday 10:00-11:50  S-029

PHYS 221: Electricity and Magnetism  (4 Credits)
Prerequisite: PHYS 103
Electrostatics, magnetostatics, electric current, laws of magnetism, Maxwell’s Equations, electromagnetic energy and electromagnetic wave equations, Laboratory.

Section A  Monday, Wednesday, Friday 10:00-10:50  S-007  S. A. Anwar
Lab:  Friday 08:00-09:50  S-027
PHYS 255: Introduction to Meteorology (3 credits)
Prerequisite: PHYS 102 or PHYS 103 or PHYS 151
Study of the physical processes of condensation, precipitation, radiation, and Radioactive transfer; solar radiation, atmospheric motion measuring properties of the atmosphere, ionosphere and magnetosphere; Earth’s magnetic field and charge density movement in the atmosphere

Section A  Monday, Wednesday, Friday 02:00-02:50   S-109  Dr. S. A. Shah

PHYS 301: Classical Mechanics (4 Credits)
Prerequisite: PHYS 103
Study of the motion of particles and system of particles. Direct application of Newtonian mechanics: Langranian formulation: Hamiltonian formulation. Motion under an inverse force field; two body problems; planetary orbital motion; Legendre transformation; canonical transformations and their properties; Poisson's brackets, theorems and invariances; Laboratory.

Section A  Monday, Wednesday, Friday 11:00-11:50   S-007  Dr. S. Aslam
         Lab:  Monday 02:00-03:50   S-039

PHYS 321: Electrodynamics (4 Credits)
Prerequisite: PHYS 221
Emphasis on the unity of electric and magnetic phenomena. Introduction of electrostatics and magnetostatics; solution of boundary - value problems; time - varying fields; gauge transformations; Maxwell’s Equations and wave equations; electromagnetic wave propagation in lossless, lossy and metallic media; wave propagation through coaxial transmission lines; rectangular wave guides and radiation from oscillating dipoles; Laboratory

Section A  Tuesday, Thursday 09:30-10:45   S-007  Dr. M Y. Zaheer
         Lab:  Wednesday 02:00-03:50   S-029

PHYS 322: Statistical Physics (3 Credits)
Prerequisite: PHYS 222
Introduction to the basic principles and concepts of statistical physics. A study of the behavior of large assemblies of particles. Phase space, physical systems, ensembles, classical and quantum mechanics, distribution functions, partition functions, thermodynamics functions and the principle of equipartition energy.

Section A  Monday, Wednesday, Friday 12:00-12:50   S-007  Dr. M Y. Zaheer

PHYS 331: Electronics I (3 Credits)
Prerequisite: PHYS 221
Study of the elementary physics of semiconductors, two - terminal devices, LEDs, lasers, Schottky diodes, three terminal devices and selected topics on metal contacts and device fabrication.

Section A  Tuesday, Thursday 03:30-04:45   S-027  S. A. Anwar
PHYS 451: Sources of Energy  (3 Credits)
Prerequisite: PHYS 301
Study of the different sources of energy, including thermal, hydroelectric, solar, nuclear and thermo nuclear.

Section A  Tuesday, Thursday 11:00-12:15  S-109  Dr. F. Hameed

PHYS 452: Atmospheric Physics  (3 credits)
Prerequisite: PHYS 222 or PHYS 255
General description of the atmosphere, atmospheric thermodynamics, solar and terrestrial radiation, atmospheric aerosol and cloud microphysical processes, atmospheric electricity and dynamics.

Section A  Monday, Wednesday, Friday09:00-09:50  S-109  Dr. S. Yasir

PHYS 461/MATH 410: Quantum Mechanics I  (3 Credits)
Prerequisite: PHYS 301 or MATH 302
Historical origination of the quantum theory, Foundation of ware mechanics, Schrodinger wave equation and its solution for free particles, The hydrogen atom and the harmonic oscillator.

Section A  Tuesday, Thursday 02:00-03:15  S-109  Dr. F. Hameed

PHYS 481: Solid State Physics  (3 Credits)
Prerequisite: PHYS 221
Study of solids, crystal structure, direct and reciprocal lattices, types of bonding, lattice vibrations, the thermal, electrical and magnetic properties of solids and the effects of crystals

Section A  Monday, Wednesday, Friday08:00-08:50  S-109  Dr. S. A. Shah

PHYS 483: Materials Science  (3 credits)
Prerequisite: PHYS 321
Study of the properties of materials; the internal structure of materials; the performance of materials during manufacture, production and processing; the performance of materials during service, crystal structures, crystal geometry, solidification, crystalline imperfections, diffusion in solids, thermodynamics and phase diagrams, and electrical materials.

Section A  Tuesday, Thursday 11:00-12:15  S-007  Dr. M.Y. Zaheer
PHYS 498 – Internship  (6 credits)
Prerequisite: Physics majors with 90 completed credit hours with CGPA 2.50 or above
Students will have to work in a well known industry/ organization or University/Institute for 6 to 8 weeks during summer semester, and will observe the timings as prescribed by the host organization. Director Career Planning will act as a liaison officer between the department and the industry/ organization University/Institute. The student will have a supervisor from the department as well as from the host organization. At the end of the completion of the training students will submit a written report to both the supervisors and will be evaluated by a departmental committee.

PHYS 499: Senior Thesis Project  (6 credits –spread over two semesters)
Prerequisite: Physics majors with 90 completed credit hours with CGPA 2.50 or above
Each student works on an independent project under the supervision of a faculty member, with the expectations that the student will prepare a senior thesis and will present a seminar on his / her work.

Note: Students not taking PHYS 498 or PHYS 499 due to eligibility or otherwise have to take two additional physics courses in lieu of to make up the required credits for majoring/graduating.
POLITICAL SCIENCE

PLSC 101: Introduction to Political Science (3 credits)
A survey of the area covered in Political Science including the nature of political science, the nature and forms of the state, structure of government, political dynamics, and the development of an appropriate political science vocabulary.

Section A  Tuesday, Thursday 08:00-09:15  S-111  Z. Awan
Section B  Monday, Wednesday, Friday 09:00-09:50  S-111  Dr. Ijaz
Section C  Monday, Wednesday, Friday 09:00-09:50  S-112  S. Sindhu
Section D  Tuesday, Thursday 09:30-10:45  S-112  S. Sindhu
Section E  Monday, Wednesday, Friday 08:00-08:50  S-111  W. Waheed
Section F  Tuesday, Thursday 08:00-09:15  S-112  M. Mirza
Section G  Tuesday, Thursday 11:00-12:15  S-112  Dr. Younis
Section H  Monday, Wednesday, Friday 02:00-02:50  N-209  Z. Awan

PLSC 102: Pakistan Government-National (3 credits)
A history of the freedom movement and study of the main institution of the national government and what makes the Pakistan government unique.

Section A  Monday, Wednesday, Friday 10:00-10:50  S-112  Dr. Younis
Section B  Monday, Wednesday, Friday 12:00-12:50  S-112  Dr. Ijaz
Section C  Monday, Wednesday, Friday 04:00-04:50  S-111  Z. Awan
Section D  Tuesday, Thursday 02:00-03:15  S-111  Z. Awan

PLSC 103: Pakistan Government-Provincial/Local (3 credits)
A study of government at the provincial and local level with an examination of the basic institutional arrangements of the provincial government. It will include discussion of provincial elections, political party organization, state public policy matters and a detailed exploration of the operation of government at these levels.

Section A  Monday, Wednesday, Friday 11:00-11:50  S-111  Dr. Hasnat

PLSC 201: Government of Western Europe and the United States (3 credits)
Prerequisite: PLSC 101
A comparative study of the parliamentary, presidential, unitary and federal systems of major western nations.

Section A  Tuesday, Thursday 09:30-10:45  S-111  M. Mirza

PLSC 203: International Relations (3 credits)
Prerequisite: PLSC 101
Theory and practice of International Relations using the distinction between realism and idealism as the basis for study. Attention will be given to power relationships, theories of war and conflict, international morality, collective security and terrorism.

Section A  Tuesday, Thursday 11:00-12:15  S-111  Dr. Bokhari
Section B  Monday, Wednesday, Friday 12:00-12:50  S-111  W. Waheed
PLSC 301: Ancient, Medieval and early Modern Political Theory (3 credits)
Prerequisite: PLSC 101
A study of political thought from early Greece through the 17th Century. Using original sources from philosophers including Aristotle, Plato, Hobbes, Machiavelli, Locke, Rousseau and Hegel.

Section A
Monday, Wednesday, Friday 03:00-03:50
S-112
Dr. Hasnat

PLSC 302: Modern Political Theory (3 credits)
Prerequisite: PLSC 101
A study of modern ideologies since the French Revolution, including Liberalism, Conservatism, Capitalism, Nationalism, Fascism and Anarchism.

Section A
Monday, Wednesday, Friday 02:00-02:50
S-111
Q. Memon

PLSC 304: Research Methodology (3 credits)
Prerequisite: STAT 101
A basic study of the techniques and tools for significant research in the field of Political Science.

Section A
Monday, Wednesday, Friday 08:00-08:50
S-112
Q. Memon

PLSC 305: Islamic Political Thought (3 credits)
Prerequisite: PLSC 101
Covering the development of Islamic political thought from ancient times to the present. The Muslim thinkers Al-Farabi, Al-Mawardi, Al-Ghazzali, Ibn Khaldun, Shah Waliullah and Allama Muhammad Iqbal will be examined.

Section A
Monday, Wednesday, Friday 02:00-02:50
S-112
Dr. Hasnat

PLSC 317: Political Dynamics: Parties and Processes (3 credits)
Prerequisite: PLSC 101 & 102
This is an in-depth analysis of the two arty and multi-party systems including a discussion of what parties are and what parties are not. A study will be made of the history of political parties, parties and elections, parties in a federal system and parties around the world.

Section A
Tuesday, Thursday 02:00-03:15
S-112
M. Mirza

PLSC 321: Pakistan Foreign Policy (3 credits)
Prerequisite: PLSC 101
This course will provide a survey and critical evaluation of the status and relationships between Pakistan and the rest of the world with special emphasis upon relations with the Islamic World and the United States.

Section A
Tuesday, Thursday 12:30-01:45
S-111
Dr. Bokhari
PLSC 322: International Law (3 credits)
Prerequisite: PLSC 101 & 203
This course begins with a study of the historical evolution of international law and continues with coverage of classification of states, Rights and duties of jurisdiction. Theories of nationalism, Diplomatic relations, Operation and enforcement of treaties, Redress of differences by war and other methods and neutrality.

Section A    Monday, Wednesday, Friday 11:00-11:50    S-112    Dr. Younis

PLSC 335: Public Opinion (3 credits)
Prerequisite: PLSC 101
A study of the general nature of public opinion; Development and application to Pakistan. Particular attention will be paid to modern techniques of measurement.

Section A    Tuesday, Thursday 02:00-03:15    S-111    S. Sindhu

PLSC 400: Current Political Problems (3 credits)
Prerequisite: PLSC 101, Junior Status
Topical issues and themes of justices, Equality and liberty, Women’s rights, Race relations, Child labor, Birth Control and other topics as chosen by the professor and members of the class.

Section A    Monday, Wednesday, Friday 10:00-10:50    S-111    W. Waheed

PLSC 403: Seminar and Major Political Science Research Paper (3 credits)
Prerequisite: PLSC 304
Major Paper (20 pages minimum) written under the direction of a political science professor.

Section A    Monday, Wednesday, Friday 03:00-03:50    S-111    Q. Memon
Section B    Tuesday, Thursday 03:30-04:45    S-112    Dr. Bokhari

PLSC 412: Foreign Policy Analysis (3 credits)
Prerequisite: PLSC 203
This is senior level course that focuses on studying the patterns and processes involved in the formulation of a country’s foreign policy. The aim of the course is to enable students to decipher the apparent “Black Box” of state and to highlight the actors, processes and organizations and motives that help to shape a country’s foreign policy

Section A    Tuesday, Thursday 12:30-01:45    S-112    Dr. Ijaz
# PSYCHOLOGY

## PSYC 100: Introduction to Psychology  
(3 credits)
A survey of the historical background and subfields of Psychology, research methods, biological basis of behavior and psychological processes such as sensation, attention, perception, learning, memory, motivation, emotions, intelligence, thinking and personality.

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<th>Section</th>
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<td>A</td>
<td>Tuesday, Thursday 08:00-09:15</td>
<td>S-115</td>
<td>S. Samuel</td>
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<td>B</td>
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## PSYC 150: Developmental Psychology-1  
(3 credits)
Prerequisite: PSYC 100
Study of human development from conception to adolescence focusing on physical, intellectual and personality development, special emphasis on development in adolescence and the quest of identity. Research activities integrated into the course work.

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## PSYC 220: Statistics for Psychology  
(4 credits)
Prerequisite: PSYC 100 or permission of the instructor
It is designed to equip the students with the basic statistical concepts and skills necessary for conducting research and provide adequate quantitative foundation for understanding psychological literature and the SPSS. This course will cover both (a) descriptive statistical techniques including frequency distributions, graphing, and measures of central tendency and variability, and (b) inferential statistical techniques including t-tests, analysis of variance, correlation and chi-square. The emphasis in this course is upon the application of statistics rather than the mathematical basis of statistics. The application of these techniques to research and the interpretation of results will be emphasized.

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<td>F. Rahman</td>
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<td>Lab</td>
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## PSYC 280: Social Psychology  
(3 credits)
Prerequisite: PSYC 100
Nature, Scope, Historical perspective and research methods. Social perception, Cognition and identity; Interpersonal relationship, Attribution, Conformity, Pro-social behavior, Groups and leadership, Attitude, Prejudice and Aggression. Facts and theories will be related to everyday social issues and concerns.

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<td>Monday, Wednesday, Friday 12:00-12:50</td>
<td>S-115</td>
<td>S. Samuel</td>
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</table>
PSYC 340: Abnormal Psychology (3 credits)
Prerequisite: PSYC 100
Nature and concepts of abnormality, historical perspective with special emphasis on Pakistan; psychoanalytic, medical, behaviorist, humanistic, and cognitive behavioral models of abnormal behavior; psychological disorders; antipsychiatry movement; overview of major psychotherapeutics techniques’ prevention of mental sickness.

Section A      Tuesday, Thursday 11:00-12:15      S-115      A. Saleem

PSYC 350: Biopsychology (3 credits)
Prerequisite: PSYC 100
Study of behavior and mental processes from the biological perspective with particular emphasis on the role of neurochemical and endocrine factors in the function of the central nervous system; chemical and neural bases of sensory processes; motivation, emotion, learning, memory, language, sleep, reproduction, gender and psychopathology.

Section A      Monday, Wednesday, Friday 03:00-03:50      S-115      S. Samuel

PSYC 360: Psychology Testing & Measurement (3 credits)
Prerequisite: PSYC 100
Functions, origins and basic concepts of psychological testing, test construction, ability / intelligence and personality testing, application of psychological tests in educational, occupational and clinical contexts and ethical issues.

Section A      Tuesday, Thursday 02:00-03:15      S-115      A. Saleem

PSYC 385: Forensic Psychology (3 credits)
Prerequisite: PSYC 100
This course will cover psychological theories and research that address legal issues, and the role psychologist lay in the criminal justice system. This course gives an overview of services provided by psychologist, such as expert witnessing, criminal profiling, trial consulting, legal decision making and the like. Converge will include the assessment and therapeutic services provided to individuals in forensic settings with suspected deviant behaviors such as Drug abuse, Mental illness, Suicide, and Sexual deviance, Topics like Gender, Race and Ethnic differences in criminal violence, causes and effects of violence in media, psychology of Sexual assault, Victimolgy, development of habitual criminal behavior and crime prevention are included. This course includes a study tour to Punjab prisons and students will be required to prepare a report based on their observations, information obtained during the tour, and classroom learning.

Section A      Monday, Wednesday, Friday 02:00-02:50      S-115      A. Ateeq
PSYC 450: History and Systems of Psychology (3 credits)
Prerequisite: For Psychology Majors: to be taken during the senior year or after permission from the instructor. Non psychology Majors: PSYC 100 & permission from the instructor
The course will explore the historical origin f modern Psychology with focus on Greek contribution, Muslim contribution, European Philosophy, and Physiology. Development of various schools of thought in Psychology including Structuralism, functionalism, Associationism, Behaviorism, Gestalt Psychology, psychoanalysis, Cognitive Psychology, Humanistic Psychology, Evolutionary Psychology, and some current trends will be covered.

Section A  Tuesday, Thursday 12:30-01:45  S-115  A. Hameed

PSYC 480A: Senior Thesis  (3 Credits)
Prerequisites: PSYC 100, PSYC 220, PSYC 305 and permission of instructor
An independent research study on a topic chosen by the student. The research study will be supervised by a faculty member of Psychology Department. Open to seniors majoring in Psychology
Note: PSYC 480 consists of two parts (i.e., PSYC 480 A and PSYC 480 B. If you are studying PSYC 480 A in the Fall semester you need to study PSYC 480 B in the following (Spring 2011) semester.

Section A  Monday, Wednesday, Friday 03:00-03:50  N-16  A. Ateeq
Section B  Monday, Wednesday, Friday 03:00-03:50  S-154  A. Hameed
**RELIGIOUS STUDIES**

**ISLM 101: Islamic Education**  (3 credits)
This course is intended to provide an introductory understanding of Islam. Students learn much about the Islamic way of life in this subject as they study about logical and rational vindication of their fundamental beliefs. The course is quite helpful in improving character traits, personality strengths and social manners in the light of Islamic teachings. By taking this course, students improve their inner conviction about their faith and are likely to become better Muslims. Basic emphasis is on ethical development and character building of the students.

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**ISLM 202: The Quran-Contents, Style and Interpretation**  (3 credits)
*Prerequisite: ISLM101*
This course is offered to assist students in understanding the Holy Quran with its meaning and commentary. The course includes compilation of the Holy Quran, Content types, general style, along with selected readings from the Holy Quran, Ulum-al-Quran (collection, exegesis and Ijaz al-Quran) inimitability of the Quran, qualities of Mufassir and different types of interpretations.

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**ISLM 401: Comparative Study of Religions**  (3 credits)
*Prerequisite: ISLM101/CRST152*
This course aims to provide students academic study of major religions of the world. Cultural contexts, scriptures, fundamental beliefs, practices and sacred art are examined. After an overview of various global forms of religions, participants look to South and East Asian rich traditions of Hinduism, Buddhism, Taoism and Confucianism. Next survey of monotheistic religions with roots in the Middle East; Judaism, Christianity and Islam. The comparative study of religions offers access to a range of human experiences that have produced much of the greatest literature of the world, inspired its art and philosophy and shaped its moral consciousness.

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CHRISTIAN STUDIES

CRST 151: Basic Christian Doctrine (3 credits)
This course serves as an introduction to the foundational Christian beliefs such as the nature of God, the person and work of Christ, the purpose of the church, the meaning of Christian life and growth, and the nature of God's Word as revealed in the Old and New Testaments.

Section A   Monday, Wednesday, Friday 08:00-08:50   E-126   Dr. McCartney

CRST 152: Christian Ethics (3 credits)
This course presents the biblical and theological foundations of Christian ethics with a special emphasis on developing the skills necessary to formulate ethical questions and find their solutions in the Bible.

Section A   Monday, Wednesday, Friday 09:00-09:50   E-126   Dr. B. Wetmore
Section B   Monday, Wednesday, Friday 10:00-10:50   E-126   Dr. B. Wetmore

CRST 251: Old Testament (3 credits)
Prerequisite: CRST 152
This course presents a survey of the literature of the Old Testament with a view to: distinguishing its unifying message; understanding the Old Testament historical books within their original cultural, political and historical contest; gaining skills in identifying and faithfully interpreting various literary genres; gaining skills in applying the original message of the various books to contemporary life.

Section A   Tuesday, Thursday 08:00-0915   E-126   Dr. B. Wetmore

CRST 252: Christian History (3 credits)
Prerequisite: CRST 152
A survey of the rise of Christianity from the period immediately following the ministry of Jesus Christ to the contemporary worldwide Christian movement. This course will highlight Christians who have made significant impact upon the Church, as well as investigating movements within the Church's history which have molded the various expressions of Christianity known around the world. This course will include a special emphasis on Christianity in South Asia from the missionary work of the Apostle Thomas to the present day. The course seeks to set within its larger historical and global context the current Christian situation for the Church in Pakistan.

Section A   Tuesday, Thursday 11:00-12:15   E-126   Mr. C. Ramsey

CRST 451: Paul's Life, Theology and Impact (3 credits)
Prerequisite: CRST 152
An overview of Paul's life and impact on Christianity within its cultural and historical setting; a survey of Paul's thirteen letters in the New Testament, and an in depth examination of key letters.

Section A   Tuesday, Thursday 09:30-10:45   E-126   Dr. B. Wetmore
SOCL 100: Introduction to Sociology (3 credits)
This course aims to develop an understanding of societal processes by critically thinking about oneself in relation to the various social structures and worlds at the individual group and societal levels. The global focus of the course uses the tools of Sociology to look at a variety of issues around the world. The course provides an opportunity to both learn about basic sociological approaches and to do some practical assignment that reinforce classroom learning.

Section A  Monday, Wednesday, Friday 09:00-09:50  E-324  A. Azeem
Section B  Monday, Wednesday, Friday 11:00-11:50  E-324  A. Azeem
Section C  Tuesday, Thursday 08:00-09:15  E-324  S. Rashid
Section D  Monday, Wednesday, Friday 10:00-10:50  E-324  S. Jabeel
Section E  Tuesday, Thursday 09:30-10:45  E-324  S. Jabeel
Section F  Tuesday, Thursday 11:00-12:15  E-324  S. Jabeel

SOCL 201: Sociological Research (3 credits)
Prerequisite: SOCL 100 or another introductory course in the Social Sciences and STAT 103
The objective of this course is to know about the major methodological approaches in social science research. Students become aware of the comparative advantages and limitations of a variety of research orientations, strategies and techniques. The class is also an experience in organized curiosity that provides an opportunity for students to do sociology. Experiments, field observations, unobtrusive research and surveys will be learned by lecture, discussion, and the review of examples. Then the class will become a research team using the basic methods and techniques of social research to carry out a group research project. As students participate in a series of activities they will develop skills in observation, interviewing, hypothesis building, theory building, questionnaire construction, computer data manipulation, data interpretation, research report writing, and client support.

Section A  Tuesday, Thursday 11:00-12:15  E-231  G. Clark

SOCL 223: Social and Cultural Anthropology (3 credits)
Prerequisite: SOCL 100
A study of races and cultures of our world with a special look at non-western cultures. It will provide tools for more effective inter-cultural communications as well as giving us a mirror in which to see our own cultural group more clearly. One key assumption of the class will be that we absorb cultural concepts most effectively through supervised fieldwork and exposure to ethnographic description.

Section A  Tuesday, Thursday 09:30-10:45  E-122  G. Clark
SOCL 301: Theoretical Perspectives in Sociology  
(3 credits)
*
Prerequisite: SOCL 100
This is an examination of the structure and scope of sociological theorizing. This class will attempt to build a quality of mind that will help us to “use information and to develop reason in order to achieve lucid summations of what is going on in the world and of what may be happening within ourselves” Wright Mills (1959:5). This “sociological imagination” will be developed by studying the theory, method and object of investigation of some “masters of sociological thought” as they tried to make sense out of the world around them.

Section A  
Monday, Wednesday, Friday 09:00-09:50  
E-230  
S. Rashid

SOCL 355: Sociology of Media  
(3 credits)
*
Prerequisite: SOCL 100
Overview of the social institution of the media and its impact on society. The course will analyze the social structure of media organizations. It will introduce students to some of the major theories of media effects and their application to Pakistani society. It will also analyze the representation of different social groups by media. Students will also be given an overview of media research methods.

Section A  
Monday, Wednesday, Friday 02:00-02:50  
E-324  
A. Azeem

SOCL 430: Sociology of Consumption  
(3 credits)
*
Prerequisite: SOCL 100, 201 and 301
this course gives a sociological explanation of consumption and consumer behavior and trends in consumption by emphasizing socio-cultural aspects of consumption. It will look at meanings attached to goods, meanings of signs, political economy of consumption, welfare and well-being and social stratifications of consumption. This course analyzes development of consumer behaviour by focusing on production, marketing, distribution, sale and appropriation of goods and products having various social identities.

Section A  
Monday, Wednesday, Friday 11:00-11:50  
E-328  
S. Rashid

SOCL 499: Final Year Independent Research Project  
(3 credits)
*
Prerequisite: Only available to sociology majors who have taken SOCL 100, 201 and 301. 
An independent research on a topic chosen by the student which will be conducted under the supervision of a Sociology faculty member.

Section A  
Tuesday, Thursday 02:00-03:15  
E-121  
G. Clark
STATISTICS

STAT 100: Basic Statistics (3 credits)
Sample and population, variables, collection and presentation of data, measures of central tendency and dispersion for ungrouped data, Index numbers, correlation and free hand line of trend.

Section: A  Monday, Wednesday, Friday 08:00-08:50  S-421  M. A. Mughal
Section: B  Monday, Wednesday, Friday 09:00-09:50  S-420  S. Ayub
Section: C  Monday, Wednesday, Friday 12:00-12:50  S-420  N. Mushtaq
Section: D  Monday, Wednesday, Friday 10:00-10:50  S-420  Dr. M. Aslam
Section: E  Tuesday, Thursday 08:00-09:15  S-421  Dr. M. Azam
Section: F  Tuesday, Thursday 02:00-03:15  S-421  N. Mushtaq
Section: G  Monday, Wednesday, Friday 12:00-12:50  S-421  M. Aslam
Section: H  Monday, Wednesday, Friday 08:00-08:50  S-420  S. Ayub
Section: J  Monday, Wednesday, Friday 02:00-02:50  S-420  Dr. M. Azam
Section: K  Monday, Wednesday, Friday 03:00-03:50  S-421  Dr. M. Aslam

STAT 101: Statistical methods (3 credits)
Nature and scope of statistics, scales of measurements, measure of central tendency and dispersion for grouped data, moments, skewness and kurtosis, fundamental rules of counting, Basic probability, moments in probability context.

Section: A  Tuesday, Thursday 09:30-10:45  S-420  S. Ayub
Section: B  Tuesday, Thursday 09:30-10:45  S-421  Dr H McCartney
Section: C  Tuesday, Thursday 11:00-12:15  S-420  M. Aslam

STAT 102/MATH 105: Probability and Probability Distributions (3 credits)
Basic set theory. Different approaches and laws of probability. Conditional probability Bayes’ rule. Random variables, some standard discrete and continuous probability distributions

Section: A  Monday, Wednesday, Friday 10:00-10:50  S-421  Dr H McCartney
Section: B  Monday, Wednesday, Friday 09:00-09:50  S-421  M. Aslam

STAT 103: Quantitative methods in social science (3 credits)
Application of Statistical methods in Social Sciences. Data analysis using SPSS.

Section: A  Tuesday, Thursday 11:00-12:15  S-319  M. A. Mughal

STAT 201: Statistical Inference I (3 credits)
Pre-requisite: Stat 101 or 102
Population and sample; Introduction to sampling distributions and their properties; point and interval estimation; testing of hypotheses about means, proportions and variances.

Section: A  Tuesday, Thursday 12:30-01:45  S-420  Dr. M. Azam
STAT 202: Statistical Inference II
(3 credits)
Pre-requisite: Stat 201
Tests based on Chi-squared distribution. ANOVA and analysis of basic designs. Non-parametric tests.

Section: A  Monday, Wednesday, Friday 03:00-03:50  S-420  M. Aslam

STAT 301: Sampling techniques I
(3 credits)
Prerequisite: STAT 201
Basic sampling designs with applications, Estimation of means, proportions and variances. Ratio and Regression estimates.

Section: A  Tuesday, Thursday 02:00-03:15  S-420  Dr. M. Aslam

STAT 304 / MATH 314: Distribution Theory
(3 credits)
Prerequisite: Stat 102
Random variables and expectations of their functions. Theory and application of important discrete and continuous distributions.

Section: A  Tuesday, Thursday 11:00-12:15  S-421  Dr. M. Rasul

STAT 305: Statistical Quality Control
(3 credits)
Prerequisite: Stat 101
Control charts for attributes and variables. Acceptance sampling plan, quality improvement procedures, Taguchi method of online or offline approach to quality improvement; signal-noise ratios using orthogonal arrays.

Section: A  Monday, Wednesday, Friday 02:00-02:50  S-421  M. A. Mughal

STAT 309: Regression Analysis II
(3 credits)
Prerequisite: Stat 303
Generalized linear regression, Assumptions, Diagnostics and remedial measures, Inference about parameters. Simultaneous equation models. Model building.

Section: A  Monday, Wednesday, Friday 02:00-02:50  S-422  Dr. M. Azam

STAT 310: Time Series Analysis
(3 credits)
Prerequisite: Stat 303
Types of time series data, trends, seasonal and cyclical analysis of data, irregular series, short term forecasting, ARMA and ARIMA models, diagnostic checking, forecasts, Box-Jenkin’s approach, spectral analysis.

Section: A  Monday, Wednesday, Friday 11:00-11:50  S-420  S. Ayub
STAT 311 / MATH 315: Mathematical Statistics  (3 credits)
Prerequisite: Stat 102
Transformation of variables, t, Chi square and F distributions with properties, distribution of order statistics, non-central distributions.

Section: A  Monday, Wednesday, Friday 11:00-11:50  S-421  Dr. M. Rasul

STAT 313: Operations Research  (3 credits)
Prerequisite: Stat 102
Introduction, Mathematical Modeling; general linear programming, simplex method, transportation problem, dynamic programming inventory control, queuing theory, steady state model and its economic analysis.

Section: A  Tuesday, Thursday 08:00-09:15  S-420  N. Mushtaq

STAT 401 / MATH 408: Stochastic Processes  (3 credits)
Prerequisite: Stat 102
Introduction, random walk and ruin problem, Markov chains and Markov processes, power spectra and linear systems, renewal theory, Brownian motion.

Section: A  Monday, Wednesday, Friday 09:00-09:50  S-438  Dr. H McCartney

STAT 407: Estimation and Hypothesis Testing  (3 credits)
Prerequisite: Stat 304
Interval estimation, Neyman-Pearson Lemma, power functions, Uniformly most powerful test. Deriving tests of hypothesis for parameters in Normal, Exponential, Gamma and Uniform distributions.

Section: A  Tuesday, Thursday 12:30-01:45  S-421  Dr. M. Rasul

STAT 408: Biostatistics  (3 credits)
Prerequisite: Stat 102
Introduction, probability distributions of biological variables, probit and logit transformations, ANOVA in biostatistics, Developing G test, R x C test of independence.

Section: A  Monday, Wednesday, Friday 03:00-03:50  S-421  Dr. M. Aslam

STAT 499: Research project  (6 credits)
Students with CGPA 2.5 or above will be eligible for research; students with CGPA less than 2.5 will have to take any other course from the list of electives.
URDU

URDU 101: Communicative Urdu (3 credits)
Communication and its different means, brief introduction to Urdu language, some fundamentals of Urdu grammar, functional Urdu, creative writing and journalistic Urdu.

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URDU 103: A Selection of Urdu Verse (3 credits)
Ghazal: Ghalib, Mir and Iqbal; Nazam: Nazeer Akbar Abadi, Akbar Allah Abadi, Majeed Amjad and Syed Zamir Jafri.

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URDU 201: A brief History of Urdu language and Literature (3 credits)
Introduction to Urdu language and theories regarding its origin; phases and trends in Urdu literature up till the 20th Century: Urdu in Delhi and Lucknow; evolution of Urdu Prose.

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URDU 203: Introduction to Satire & Humor in Urdu Literature (3 Credits)
Introduction to Satire & Humor in Urdu Literature, difference between Satire & Humor, a brief history and importance of Satire & Humor,
**Prose:** Patras Bukhari, Ibn e Insha, Mushtaq Ahmad Yousufi, Col. Muhammad Khan.
**Poetry:** Akbar Ilahabadi, Syed Muhammad Jafri, Syed Zameer Jafri, Anwar Masood

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URDU 204: Urdu Grammar and Literary Terms (3 credits)
Ilm-ul-Bayan: Ilm-ul-Badih, Adabi Istalahat

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URDU 208: Script Writing in Urdu (3 credits)
Documentary writing: Program scripts, Journalistic scripts, Business scripts, Drama and Film scripts.

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URDU 302: Criticism
Basic principles and definition of criticism; Oriental criticism; Western criticism; Practical criticism.

Section A  Monday, Wednesday, Friday 11:00-11:50  E-330  Dr. M. Tahir

URDU 303: Introduction to Selected Genres
Introduction to poetic and prose genres of Urdu Literature: Ghazal, Nazam, Rubai, Qata, Haiku, Dastaan, the novel, drama and character sketch.

Section A  Tuesday, Thursday 12:30-01:45  E-328  Dr. A. A. Virk

URDU 305: Autobiographical Literature in Urdu
Evolution of autobiographical literature in Urdu; selected autobiographers: Abdul Majeed Salik, Rashid Ahmed Siddiqui, Ihsan Danish and Qudrat Ullah Shahab.

Section A  Tuesday, Thursday 02:00-03:15  E-328  A. Anwar

URDU 405: Principles of Literary Research
Definition of importance of literary research; evolution of Urdu research until Aab-e-Hayat by M. Hussain Azad; principle and resources of research; terminology and preparation of research paper

Section A  Tuesday, Thursday 11:00-12:15  E-328  Dr. M. Tahir

URDU 406: Practical Research
A research paper of 50-100 pages on any topic regarding Urdu language and Literature.

Section A  Tuesday, Thursday TBD  TBD  TBD